The Builder.

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WE have sought from time to time to make our readers acquainted with some of the buildings going on in AMERICA, and the works published there for the diffusion of architectural knowledge, a desire for which appears to be increasing. We hope soon to be able to do this to a greater extent, and at the same time to aid, more largely than we may yet have done, in disseminating in that important country knowledge of those matters whereof we specially treat. American architects have great advantages: they may use marble and granite under circumstances where we should be forced to put up with bricks; and in laying out new towns, can avail themselves of all the dear-bought experience of the old world, unfettered by previous exertions, arrangements, and prejudices.

We have before us one of the most recent contributions to American architectural literature, entitled "The Architecture of Country Houses;" including Designs for Cottages, Farm-houses, and Villas (on the model of Loudon's Encyclopædia of Cottage Architecture), by Mr. A. J. Downing, of Newburgh, on the Hudson, which is a very creditable attempt to develope the growing taste of the people, and will doubtless have a good effect.* Mr. Downing has a full sense of the value of the individual home—the importance of a good house—as a means of civilization.

"A nation, whose rural population is content to live in mean huts and miserable hovels, is certain to be behind its neighbours in education, the arts, and all that makes up the external signs of progress. With the perception of proportion, symmetry, order, and beauty, awakens the desire for possession, and with them comes that refinement of manners which distinguishes a civilised from a coarse and brutal people. So long as men are forced to dwell in log huts and follow a hunter's life, we must not be surprised at lynch law and the use of the bowie knife. But, when smiling lawns and tasteful cottages begin to embellish a country, we know that order and culture are established. And, as the first incentive towards this change is awakened in the minds of most men by the perception of beauty and superiority in external objects, it must follow that the interest manifested in the rural architecture of a country like this, has much to do with the progress of its civilisation."

Much of that feverish unrest and want of balance between the desire and fulfilment of life, is calmed and adjusted by the pursuit of tastes which result in making a little world of the family home, where truthfulness, beauty, and order, have the largest dominion.

"When one reflects," says M. Lance, in a report recently made to the French *Société Centrale des Architectes* on the "Improvement of Unhealthy Habitations,"—"as to the influence which the dwelling may have on the physical and moral life of the individual; when one considers that our house becomes the mould of our inner life and domestic habits,—that it is the place of our repose after the labour of each day, and the centre of our dearest affections,—it appears truly surprising that philosophers, moralists, and all those who put themselves forward as teachers of the people, have not perceived that the reform of the poor man's dwelling should precede those other reforms for which they call so loudly."*

Mr. Downing's book, however, does not relate to dwellings for the poor; but the argument is in sequence. "Whether another planet shall be discovered," says he, "beyond Le Verrier's, may or may not affect the happiness of a whole country; but whether a young and progressive people shall develope ideas of beauty, harmony, and moral significance in their daily lives; whether the arts shall be so understood and cultivated as to elevate and dignify the character; whether the country homes of a whole people shall embody such ideas of beauty and truth as shall elevate and purify its feelings: these are questions of no mean or trifling importance."

In his first chapter he points out the necessity of attending to convenience, strength, and comfort in designing structures, and urges that it is a proof of weakness rather than strength to treat with the slightest neglect the utilitarian side of the question. "To the majority of mankind the *useful* is the largest satisfaction derived from architecture, and while an able architect will always treat the materials placed in his hands for a new design, so as to give something of the expression of beauty even to the simplest forms, he must never imagine that in his art he can largely neglect the useful for the beautiful. As, in the Apollo, every muscle must be found which enters into the body of the hardiest day labourer, so, in all perfect architecture, no principle of utility will be found sacrificed to beauty, but only elevated and ennobled by it."

The love of the Beautiful is a worship by the heart, of a higher perfection manifested in material forms. To desire to surround ourselves by matter ennobled by beauty rather than be content with mere utility, is to acknowledge the existence of a sentiment which, next to the religious one, is the purest and noblest part of our nature. The contemplation of the beautiful is most useful; and when the gratification of this is the only utility sought, as in monumental adornments, beauty has only to be considered. In domestic architecture the primary condition is that it be useful; the second, that the utility be beautifully provided.

Our author is earnest in his claims for *truth*,—the *general* truth that the building is intended for a dwelling-house; the *local* truth, that it is intended for a town or country house; the *specific* truth, that it is intended for a certain kind of country-house,—as a cottage, farm-house, or villa. His views regarding truthfulness of materials he shall give in his own words:—

"The principle," he says, "which the reason would lay down for the government of the architect, under this head, is the simple and obvious one that the material should *appear* te be what it is. To build a house of wood so exactly in imitation of stone as to lead the spectator to suppose it stone, is a paltry artifice, at variance with all truthfulness.

When we employ stone as a building material, let it be clearly expressed; when we employ wood, there should be no less frankness in avowing the material. There is more merit in so using wood as to give to it the utmost expression of which the substance is capable, than in endeavouring to make it look like some other material.*

There are certain architectural fictions with regard to apparent truthfulness of material, which are so well understood as not to deceive, and are not, therefore, reprehensible ones—such as painting the surface of wooden, and cementing or stuccoing the exteriors of brick and stone houses. Protection from the weather demands this, and no one fails to recognise wood or solid walls though entirely hidden from the eye. And in the case of stuccoed walls, the expression of strength and solidity is very properly conveyed to the eye by marking it off in courses, to denote the bonds and courses of the solid wall beneath, and to take away the mere lath-and-plaster look of a plain stuccoed wall. To mark off in courses a house actually built of lath and stucco, as we have sometimes seen done, is, on the other hand, a downright violation of architectural truth. For the same reason we would prefer to see the stuccoed exterior of a brick wall marked faintly in small courses, so as to denote that brick is the material of the wall, rather than boldly in large courses, to signify stone. There is no reason why the stucco which only stands for stucco, should not have an agreeable colour, wholly different from those of the brick and stone put beneath it (because it is only when stone or brick is not altogether satisfactory to the eye that we cover it with stucco); but the principle of truth should lead us to point out, by the lines on the stucco, whether it cover a stone or brick wall."†

He properly urges his brother architects, in planning country houses in all parts of the country, to let the habits, and wants, and mode of life (assuming them to be good and truthful ones) stamp themselves on the main features of the house. It is thus that domestic architecture would always be growing better, more truthful, more individual, and therefore more rational and sincere, rather than more foreign and affected. He says, as to this,—"Foreign architects are finding their way to this country very plentifully. Some among them, who follow rules and not principles, do us great harm by building expensive and unmeaning copies of foreign houses—as, for instance, English villas, with narrow passages, disconnected rooms, and no verandahs for the warm climate of the middle states. Others do us service, by studying the peculiarities of climate and mode of life, and adapting their designs to meet the peculiarities."

There being no law of primogeniture in America, a citizen's money is usually divided, when he dies, amongst all his children. There is no inducement to the wise to spend large sums in the erection of country seats, which would be beyond the means of any individual member of the family after the first life. Our author says on this point:—

* The Architecture of Country Houses; including Designs for Cottages, Farm-houses, and Villas, with Remarks on Interiors, Furniture, and the best Modes of Warming and Ventilating. With 320 illustrations. By A. J. Downing, author of "Designs for Cottage Residences," "Hints to Persons about Building," &c. New York: D. Appleton and Co., 200, Broadway; Philadelphia: George S. Appleton, 164, Chestnut-street. 1850.

* Rapport sur la Proposition de M. Harou Romain, relative à l'Assainissement des Habitations Insalubres. Par une Commission composée de MM. Bourgeois, Danjoy, H. Romain, Adolphe Lance, Lepoitevin, et Rohault de Fleury.

* "Perhaps an exception may be allowed in the case of wooden verandahs, and such large additions to buildings of solid materials as we often see added in this country, in districts where the stone is so hard as to be very costly when wrought into small parts, so that wood is often used, but is so painted and sanded as to harmonize with the stone. In this case, we say, the apparent untruthfulness is permissible, for the sake of a principle almost equally important—unity of effect; for nothing is more offensive to the eye than an avowed union of wood and stone in the same building. But, of course, this is a sacrifice to expediency; and the more truthful treatment, viz., making all portions of one material, is the only entirely satisfactory one."

† "Marking off stucco to indicate a stone wall, is the common and prevalent mode in this country; though we have never seen brick expressed as we have suggested. This might be most easily and effectually done by pressing a mould, marked with lines, upon the face of the stucco, as soon as it is put on the wall. Patterns of various kinds were thus stamped upon the walls in Moorish architecture, with beautiful effect. The lines would always express that the wall beneath was of brick; but they should be only faintly impressed, and not deeply stamped, and without the mortar lines whitened so as to *imitate* brick."

"There is something beautiful and touching in the associations that grow up in a home held sacred in the same family for generations. A wealth of affection is kept alive in those old manor-houses and country halls of England, where, age after age, the descendants of one family have lived, and loved, and suffered, and died,—perhaps nobly and bravely too, sheltered by the same trees and guarded by the same walls. It is quite natural that we, largely descended from this Anglo-Saxon stock, when we have fortunes to spend, should fondly delude ourselves with the idea of realising this old and pleasing idyl of beautiful country life. But it is only an idyl, or only a delusion to us. It belongs to the past, so far as we are concerned. It is no more to be reanimated in the republic of the new world than the simple faith in the Virgin, which built the mighty cathedrals of the Middle Ages. It could only be reanimated at the sacrifice of the happiness of millions of free citizens."

He gives a very useful chapter on ventilation, and says, in conclusion, "that, fond as our people are of improvement, the greatest possible improvement in a dwelling-house—ventilation, is as yet a thing almost unknown in this country; though we predict, that in a few years, the man who warms his room by a close stove, with no ventilator, will be looked upon as little better than him who should more openly undertake to poison his family and friends with a brazier of charcoal."

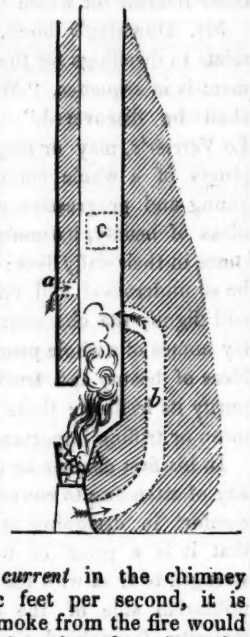
There is much good sense and ability manifested in Mr. Downing's book, and we stretch our arm across the "big water" to tender to our Yankee coadjutor an English shake and a friendly recognition.

CAUSE AND CURE OF SMOKY CHIMNEYS.

Having, in the foregoing papers,* taken some trouble to explain the philosophical principles involved in the action of chimneys, in order to demonstrate clearly the fact that the *primary* cause of their action is the *rarefaction of air;* and having seen how this primary cause operates, we may consider ourselves sufficiently prepared to enter upon the consideration of the causes which produce *imperfect action*, or what is familiarly called the "Smoky Chimney." We will proceed to do so by arranging these causes into five distinct classes, viz.:—Firstly, deficient rarefaction; secondly, deficient supply of air; thirdly, the action of winds; fourthly, deficient capacity of flues; fifthly, the influence of adjacent chimneys. We will examine these five classes in all their bearings seriatim.

First, then, as to *deficient rarefaction*. We have seen that rarefaction in chimneys is produced by *heat*, and it follows, therefore, that anything which operates to cool the air in a chimney tends to impair rarefaction. Now, this may result from either of two distinct causes: first, the admission of cold air into the chimney; and, secondly, the radiation of heat through the material of which the chimney is constructed. The first of these, the admission of cold air, may be brought into operation in a variety of ways, of which the following may be considered the principal, because of most common occurrence: viz., *large openings* at the fire-place, that admit air into the chimney without its having been sufficiently within the influence of the fire, to produce the required degree of rarefaction; *dust flues* leading from the ash-hole behind the fire-grate into the chimney above the opening; *flues entering from other fire-places*, which, when not in use, supply cold and therefore unrarefied air from the rooms in which they are situated; *ventilators* in the chimney breast for the purpose of carrying off the impure air of rooms, which is always at a much lower temperature than that in the chimney, and therefore the rarefaction of the latter is impaired; *lateral openings* of any description which admit air of a lower temperature than that in the chimney at the point at which it enters; *imperfect joints, or holes*, in the partitions of adjoining chimneys, which have the effect of admitting cold air from these chimneys when not in use.

The result of the admission of cold air being the same in all the above, and, in fact, in all cases whatever; one illustration will serve for all. For this purpose, then, let us suppose the diagram, fig. 9, to represent the section of a chimney where A is an ordinary stove grate, B the opening of the fireplace, and the dotted lines at *a*, *b*, and *c*, respectively, a *ventilator*, a *dust-flue*, and a *flue* entering from an adjacent fireplace. We will take the temperature of the air in the chimney to be 120° Fahrenheit, that of surrounding atmosphere being 60°; and the velocity of the *current* or "draught" 10 cubic feet per second. Now, if we suppose the gas, or smoke to be evolved from the burning coal at the rate of 10 cubic feet per second,



the velocity of the *current* in the chimney being also 10 cubic feet per second, it is obvious that all the smoke from the fire would be carried off. But if we introduce into the same chimney either a ventilator *a*, a dust-flue *b*, or a flue from an unused fireplace *c*; the external air, by reason of its superior gravity, will flow through such openings; and, mixing with the heated air in the chimney, will reduce its temperature, and, consequently, increase its specific gravity or weight. We have already seen (page 278) that the velocity with which one fluid rises through another is proportionate to the difference of their specific gravities; and, therefore, by increasing the specific gravity of the air in the chimney, we diminish the velocity with which it rises. Suppose, then, that a sufficient quantity of cold air has been admitted to reduce the velocity of the *current* to 9 cubic feet per second, the volume of gas or smoke being still the same, *i.e.* 10 cubic feet per second; it follows that there is evolved 1 cubic foot of smoke per second more than can pass off by the chimney: it therefore backs into the room in which the fire is situated; or, in other words, the "chimney smokes."

It may not be out of place to observe here, that during the whole time that the process of combustion is maintained in a fire grate, various gases continue to be evolved from the burning coal, of which carburetted hydrogen and carbonic acid constitute the chief portion. These two gases are given off in an inverse ratio, *i.e.* when there is most carburetted hydrogen there is least carbonic acid, and *vice versâ*. For example, when fresh coals are put on a fire, a dense yellow smoke rises, which is chiefly carburetted hydrogen, highly charged with carbonaceous matter. As the coal burns to a cinder, carbonic acid gas begins to be more freely evolved; and when the coal is completely incinerated, carbonic acid forms the chief portion of the gas generated: it is perfectly transparent, and being combined with sulphuretted hydrogen, it possesses a strong sulphureous smell, and produces a stifling sensation when breathed.

The second cause of deficient rarefaction above alluded to, *i.e.* the radiation of heat through the material of which the chimney is constructed, operates differently, inasmuch as the heat, or *caloric*, is abstracted from the air: in the former case it is merely diluted by the admission of cold air.

All material substances possess the property of absorbing or conducting heat, but there is great difference in their conducting power: for instance, we say that copper is a good conductor of heat, and wood a very inferior one. All substances contain heat, or *caloric*, in a greater or less degree, and such is its nature that it is continually passing from one body to another, endeavouring to produce an equilibrium or balance of temperature; or, in other words, tending to produce one uniform temperature throughout all nature. For example, if we take a vessel of water heated to the temperature of 100° Fahrenheit, and place within it a block of iron at 50° Fahrenheit; in the course of a few seconds the temperature of the water falls considerably, and we will then find that the heat lost from the water has passed into the iron and raised its temperature correspondently. Now if the vessel be of iron, the heat will enter readily into it until it become as hot as the water contained by it: and being a conductor, in common with all other matter, the heat will pass off from the outer surface as fast as it enters the inner surface of the vessel, and it will be absorbed by whatever substance chances to be in contact with the outer surface. If this substance be atmospheric air, then the heat will continue to pass through the sides of the iron vessel, until the water be reduced to the same temperature, when the absorbent power of the atmosphere ceases.

In the case of a chimney, a certain amount of heat is constantly passing through the material of which it is constructed into the atmosphere; which, being at a much lower temperature, greedily receives it. As this abstraction of heat goes in, the rarefaction is impaired; the air in the chimney becomes heavier, and therefore offers a greater resistance to the impelling column of cold air at the opening to the fire place; the *current* or "draught" of the chimney is impaired, as already described, and the chimney "smokes."

Chimneys are also subject to a more powerful abstractor of heat than the atmosphere, *i. e. rain*. In rainy weather there is a constant evaporation kept up at the outer surface of the chimney by the rain which falls upon it, which abstracts the heat rapidly from the air inside; and here lies the cause of imperfect action in those chimneys which "never smoke except in wet weather."

The conducting powers of those materials of which chimneys are generally, either partially or wholly, constructed, rank in the following order:—1st, iron; 2nd, zinc; 3rd, stone; and 4th, brick,—iron being the best conductor, and therefore the least fitted for the construction of chimneys. Tba.

* See pp. 529 and 578, vol. viii.; and p. 3, vol. ix.

ON THE STUDY AND APPLICATION OF ART.*

The subject which I have chosen for consideration is one which, from the thoughts it gives rise to, may lead us occasionally into a grave mood; so, for its profitable entertainment, may it exert a more than usual claim upon attention. Among so many capable of entering into the practical niceties of your profession, I do not fear disapprobation for selecting subjects of a general character and application, and which mainly affect architecture, not exclusively in itself, but as a branch of art universal—a branch which must, however, draw its nourishment, like all the other branches, from the one parent tree, and be trained in a like manner with them. It is, then, of that mode of training I propose to speak, being free to confess my opinion, that by many followers of individual arts, not only are the principles of general art, but the modes of improving any art, too often forgotten, and consequently a want of particular success attends that oblivion, which a more liberal grasp of mind—a greater care—would tend to obviate; that is, to return to a former figure, some expect their favourite branch to flourish by other means of culture than that adopted for the rest, and then wonder that, so far as they are concerned, it withers. If I should appear, in the course of this paper, to speak at times with some degree of freedom, attribute it rather to zeal than to assumption—a zeal, indeed, in one sense more selfish than not,—that by the free expression of my own opinion and experience, I may find them the better

* Read by Mr. H. T. Braithwaite at the Architectural Association, as mentioned last week.

corroborated or amended by an equally free return. First, then, reserving at present the artistic, to treat of the general necessities of the study of art. I speak of the study of art, because we know that, however contrary to common supposition, it must come prior to the knowledge of art. If, then, we establish anything advantageous to the one, it will necessarily extend a good influence to the other, either by hastening its arrival or by increasing and improving it in the main. The first necessity, then, that suggests itself, is a desire to learn, an ambition to know, which seems to be one of the most natural we possess, while, if any one appear not to have it naturally, a conviction of ignorance, a feeling of emulation, will probably suffice for its acquisition at an early period of life. It may be said, the conviction of personal ignorance is rather the result of great knowledge than of little; but, however true that may be, we cannot imagine that any man in his senses can really have arrived at the conviction that there is nothing more for him to learn, or that, perceiving the power and influence of the learned, he can despise the position they hold. Many are indolent, we know; but no man who depends upon his head and its work, *can* be so, without flagrant violation of common duty, and a vast deal of practical unhappiness. In the professions, then, the necessity of work is apparent, the desire to know *must* arise from outward pressure, if from nothing else. But here, where our very meeting in this place arises from the love of knowledge, there is no need, for the sake of arousing it, to descant on the immense advantages of study, or to say how in these educated times our very duty to the state and to each other,—aye, even to one immeasurably above both,—demands that we *should* study, and so qualify ourselves to the utmost for serving, improving, enlightening our fellows. In old time how diligently were the young trained in the use of the weapons of war, and shall we not now, how far more rightly! train ourselves to wield the instruments of peace? It is quite possible that one with the greatest desire to study might be at a loss how to do so to the best advantage —perplexed where to begin, how to proceed. Here, then, is the second necessity—to know how to study; and it will be principally in an endeavour to point this out that I shall employ the first part of our time, before proceeding to consider the application of that knowledge which I shall suppose we have then obtained. I know you love practical remarks; but as I cannot, from my position, offer you, for instance, a dissertation on the variation of mouldings, I shall endeavour to be practical as respects the treatment of our minds; and could I offer but one suggestion likely, if adopted, to improve that, it would not be speaking in vain. To begin, then, we must walk before we attempt to run; we must know how to be creditable tortoises before we may dub ourselves hares. But many would be hares at first, and consequently never attain the distinction of the deliberate tortoise. This is why so many of what are called promising geniuses never bloom into performance, because they are either hurried by others or hurry themselves; because it seems to be believed, that with fine minds you must begin to teach at the summit. Let any who entertain such an idea build me a church, —but upon this condition, that he begin with the weathercock, and end with the foundation. Were that possible, such a building would contain just the same quantity of stone, just as much ornament; but look at the order of it! Or would it be a good exercise for the growing body to be always endeavouring to stand on its head? And so a man may appear to have learned much, may have spent much time over his books, and yet have no available knowledge; and all because he began to build at the vane, which none of us, who are architects, would possibly do. To study properly, then, we must begin with the broad solid foundations; we must give them time to settle: then stone by stone, pillar by pillar, with care, nicety, and order, pile up the tower of our knowledge. We are too apt to be fascinated with the grandeur of things at present beyond our reach, and on that account, failing in the endeavour to attain them, become discontented and weary. It is here that the dislike of dryness comes in. It is here that, from a sort of despair, we get desultory. It is here that, being desultory, we have too many things to attend to, and finally attend to none. Therefore we observe the necessity (thirdly) of method, order, arrangement. Look at it in nature. Observe the extraordinary balance of all things, — the gradual and uniform succession of the seasons, the economic circle by which there is no loss—the exactitude of the course of production: look at the order there is in our own growth from infancy to manhood, our decline from manhood to old age. Why then should we seem to believe there is no order with respect to our minds, by disregarding it in the education of them? Why should we study in a fitful manner, crowding together fragments of all diverse subjects into one ill-favoured whole, certainly wanting either in beginning, middle, or end, and, besides, leaving no room for reflection, the very security of all we may learn? As to books, it is quite possible to keep them sufficiently various to give relief to each other in a fixed succession, and sufficiently connected to increase the particular knowledge we seek. For everybody knows that the tributaries of a stream are not trees; but do not some act as if a congenerous aid to the study of mathematics, for instance, were heraldry? Now it would be a mistake to fall suddenly from the study of one style of architecture to another at a distance—where the two had anything in common—without attending to intervening modifications; just as you would not learn the history of Rome from studying the reigns of Numa and Commodus. And how is the memory assisted by a consecutive order in study! How much better we remember any epoch in art from knowing what preceded, what led it; how itself, in turn, was the date of some further advance. In the study of all history—in the study of the history of art—there is a grand method that connects together causes, circumstances, and consequences: they reveal to you that which lies behind the ostensible, sometimes the pretended, facts of things; and in the one case provide you with reason, in the other with truth, which you can apply for your own progression. The observance of these you will find indispensably necessary to the permanence of what is acquired in the mind. Your knowledge will then be clear and durable as the glass that admits the light of heaven in the chamber; but, otherwise, like the winter frost on the pane, florid indeed, but confused and evanescent. The next necessity (4thly) is a regard of time. We need not dwell upon indolence, which is obviously injurious to all. The division of time is what I chiefly intend at present. Was it not Sir W. Jones who attained to the knowledge of about thirty-six languages —and how? Why, by dividing his time methodically, having a fixed hour for every subject, with such success as to be soon astonished at his own progress. There is, I think, a story of Alfred the Great studying by a candle of different colours, and measuring his occupations according to the periods it fixed: a space of blue for one work, of red for another, and thus a method for all. Much may be gained by the saving of leisure moments, and many students have read whole works by always keeping some book to be read at such times; in fact, those who have not noticed it have no conception of the time wasted in scraps, or of the advantage of a time-book, such as here alluded to. Time is always hurrying away, and requires to be seized upon and continually held; for nothing would save even the brightest genius of youth from being dropped, if he would not hold on, into the despondency of a foolish age, the more unhappy from the contrast. I might here, in passing, speak of that far more important loss of time which the Emperor Titus complained of when, having passed a day without performing any good action, he said, "I have lost a day." Consider how much time is necessary to a thorough understanding and practice of architecture, because you have need of a degree of manual as well as of capital skill. You must know how to draw with mechanical instruments; how to sketch, and must understand perspective; you must also have some knowledge of colour and effect; and it is an advantage to understand lithography, and some of the like arts, especially for any who are much dependent on themselves. Again, you should know the principles of art derivable from study of nature, and as they have been interpreted in the greatest works of man. Then, with respect to your own art in particular, you should be informed of its history and of its styles—of their characteristics and appropriate uses. You must understand construction as the very life of your work—that on which depends its stability—that by which alone you are enabled rightly to connect parts in one fitting whole; for see how many designs, seemingly excellent on paper, become absurd in stone, for want of right construction! You must study design, as that which shall give you a facility of original expression—that which shall enable you, not merely to reproduce what people built at Athens, but, entering into the spirit of a style, to produce something independent in its expression, though, from necessity, dependent in its origin. There may be a general resemblance between an old style and its modern subordinates, but they need not of necessity be exactly alike: either may possess some advantage or deformity foreign to the other, though both be intersimilar in the main; by which, I would say, we are not bound to imitate the defects of a style, nor ought we to turn its beauties into blemishes. It is a matter of surprise that we should often see architects pitting one necessity of their art against another — one exclaiming, "Nothing is of use but construction;" another, "nothing but design;" this one, "Glory to Gothic!" and that "Classic for ever!" which is all highly injurious, the true object being to advance architecture as a whole, and not to be setting its members to buffet each other. Now, why I have enumerated what we ought generally to know and to do, under the head of the necessity of regard to time, is this, to show by the extent of it how little time we have to spare if we want to excel, and to impress what has already been urged concerning method. We now come to a necessity (5thly), under which are included two things closely connected—self-denial and industry. It is not the place here to urge the former in its grand moral bearing as I might, but it is to impress it in another as affecting art. If we love our art, we shall give ourselves up to it. Men of art, some say, are moved by two affections—the love of art and the love of money. But let us protest against any imputation that artists are avaricious: they act from a better principle than avarice, and although that may have been found in a few masters, it cannot be the less held up to contempt. We act—some from pure love of art,—some from desire of fame,—but I will say many from a determination to do good, to improve the common mind, to render art subservient to higher purposes. Here is the true ambition of the artist, and it shall make him great in fact, whether in appearance or not. I say, then, the self-denial in the cause of art that arises from this ambition, is good and pure in itself, and I know several instances among ourselves where it does so arise—a great and glorious sign of the future! Having established the necessity of self-denial, of sacrificing pleasure, and frivolity, and the like, as Michaelangelo did, on the altar of our art, we proceed to that of industry, greatly dependent on the other. Work, said Goethe, is the soul of man. Let us see men follow the precedent of the ancients in work at least. Let us take Demosthenes as an example. By work and immense perseverance he overcame a natural impediment of speech: by work he attained to an order and method in speaking no one has ever surpassed: by work, by endurance, after two rejections by the people, he at length gained their enthusiastic admiration,—and the man who had ill health, a neglected education, and a stammer, came to be one who spoke in thunder and lightning—who so excelled all others that, as Philip the king said, he did not, like Isocrates, one of the most eminent, push with a foil, but fought with a

sword in argument; whose orations against that monarch were as so many armies. By work Cicero attained to that eminence—that authority, which makes us in these days read his account of Demosthenes. Work, slave to the lamp of genius, produced the printing-press, which created an era in the world, and a revolution in the human mind. Work, subservient to skill, fashioned the steam-engine, and has so, in respect of consumption of time in travelling, increased the duration of our life sevenfold. Work, toiling under science, has given us the electric telegraph, and, as to time lost in distant intercommunication, has rendered life comparatively infinite. It is enough thus to exemplify work. It was still work that made Shakspeare, Milton, Bacon, Newton, Wykeham, Wren, Harvey, Reynolds, and a thousand more; that made our greatest divines, lawyers, generals, statesmen, and Peel, the illustrious patron of the arts, now, alas! gone; and it is work only that will immortalise this association by means of the future fame and honour of its members.

Having attained self-denial and industry, we come to the necessity (6thly) of patience and care. I mean by patience, the faculty of not being discouraged by those disappointments which must attend our course—of not being disgusted by a want or supposed want of appreciation of our early efforts, ever remembering that the fault may be on our own side—of not only not being discouraged nor disgusted, but of continuing, enduring, persevering: that is what I call patience in the study of art. How many of us have entered into competitions, and been once, twice, thrice disappointed? How many of us have yet again tried, and may have—I hope some of us, at least,—succeeded? But if we have not succeeeded yet, can we ever hope to, by leaving off at the point where we failed? By saying, as we have heard some do, "It is no use trying?" These are desperate words. If a man wished to climb a mountain—if it were actually necessary for him to do so—if halfway up he encountered an obstacle, and he endeavoured once, twice, thrice to pass it, ought he, with the light still shining on the peak, and the darkness gathering behind him, ought he to turn back, or to make a fourth, aye a ninth effort? Yet, if he could *not* proceed, it were still something to maintain the same position: despair not only prevents our progress, but renders useless our previous march; and there is a certain invisible hand that assists the persevering, that helps the fallen to rise again, if he will. Are we not liable to be misled by our own youthful fire? and is it not, therefore, possible that it may want at times controlling, even partly quenching by transient disappointment? Disappointment should be the discipline, not the death of the spirit. Disappointment should arm, not despoil. Disappointment should leave us real power by stripping us of what is assumed. How it should do all this, is simply by re-arousing our industry, like a giant refreshed with wine, and making us determined by energy to succeed. By *care* I mean the faculty of criticising our own works—of correcting them—of using the file of labour before it is assumed by others. We shall not then have to reproach ourselves with indulging conceit or negligence: we shall not, so far as our power could prevent it, send them naked, or blind, or lame, into the harsh world of criticism, to be buffetted, to stumble, or to limp. And this care is absolutely indispensable to greatness: we owe it as a duty to ourselves and to the world—as a necessity to our usefulness. It is delightful to see how our great men have exercised the virtues we speak of; to mark how Newton, the same man who, without passion, sat down at once to begin afresh the cherished work his dog had destroyed; how Newton fought his way against an opposition, as bigoted of its kind, as was that offered at an earlier period to Galileo; to observe, in the poems of Pope, that wonderful polish—in the designs of Wren and Scott, that maturity of finish which can alone result from careful self-criticism and close attention. In a word, this care is the presence of mind in the artist as respects his art, and without it the highest genius is likely to become erratic. We know that to correct a favourite work, a work anointed with the midnight oil, accounted a chief work, a king of works in our estimation, is most deeply irksome; but it *must* be done, and the more in proportion to our own esteem of it.

The next necessity to the right study of art is (7thly) the possession of purpose and principle. Some might wonder what these could possibly have to do with it; but on what ground? What is the use of a man without a purpose, of a work that has no leading idea, of a life without an aim? Why, they are not only useless, but absolutely injurious. A man may very naturally say that his purpose is to get a living, which is, so far, a very necessary and a very good one. But is there nothing beyond, nothing unselfish, nothing of advantage to others? The purpose of that true artist whom we have said to love, to devote himself to his art, will be to elevate that art as much as possible, to give it a dignity and majesty, to render it of active and permanent influence in the world. He would say to his art, "Thou are mine, and I am thine." "I will serve thee truly, and thou shalt enrich my mind; I will make thee queen, and thou shall ennoble me." But supposing such a man to have still higher views,—supposing him to be conscious of the effect of his art, and of his own power in its exercise,—his purpose would be to use it as a mode of lifting, purifying, and adorning minds less gifted than his own; he would find himself in the position of a teacher of his race; he would now say to his art, "Thou shalt be a queen, not to ennoble me, but to bless others, and my reward shall be the sense of a fulfilled duty;" and thus, feeling the requirements of his position, he would work in a double strength. Thus, too, we see that the entertainment of a right purpose immensely assists the development of art, while its exercise becomes not only a mere means of self-existence, but an actual benefit to the mental, aye, and perhaps moral life of others. Need we adduce Milton as an example of a man with a purpose in his art? We know what that was, as he expresses it, "to justify the ways of God to man," and we know how wonderfully for a man he succeeded. Now, cannot an architect have a purpose and express it? Is his art, an art capable of material sublimity and beauty, alone to be shut out from the place of an instructress? We know it is not. Who has not felt more civilised by the contemplation of some beautiful public building? Who ever entered one of our cathedrals without feeling exceedingly small, not to say insignificant—a mere nonentity—as regards himself, and more than usually elevated to the contemplation of his Creator? It is here that architects have the power to teach. It is in *this* manner, by the use of the sublimity and awfulness of your art, that you can execute the very loftiest and best purpose: it is by making matter the expression of your own pure and devoted mind, that you can render it a power over minds that are impure and undevoted: it is the love you may throw into your labour, the holy thought that you may impress upon it, the spiritual life that you may breathe on it, that shall be for love, and thought, and life to the minds of others; that shall raise them and exalt you; that shall exalt them and lift you up for ever as servants of the truth:—yes, it is by your work that beauty and grandeur may be sent as ambassadors to the untaught mind, and say, "We are what we are in the name and for the glory of God; we stand before you as witnesses of His truth!"

Principle is to the artist what purity is to his work. It is certainly not impossible for an unprincipled mind to produce a great thing; but still we cannot but feel that the prevalence of anything base, mean, or unworthy in the mind, will, unless we must consider art purely mechanical (which it is not), extend an unhappy influence to a man's work. We know that this is so in literature, where the most definite expression exists: we know of works wonderful enough in their power, which are the curse of thousands, and befool half those who read them. And though in architecture this bad expression is almost impossible, because while, by a strange anomaly, men were allowed to write indecencies, they would never be permitted to embody them in stone; although it is impossible, yet the absence of principle leads often to a coldness and carelessness—it induces the sort of fraud, by which a man builds his work improperly to save his own gold, and in this way injures the art, and brings contempt upon it. Therefore, if these things arise from the lack of principle, am I not right in insisting on its presence in the true artist? On a matter like this it is not well to dogmatise, but we may assert, as a general rule, that a pure morality is of immense advantage by itself—of unbounded power when associated with genius. For if we grant that a man may without it attain the summit of excellence in art,—though one can see many obstacles likely to arise from vice, many drawbacks from dissipation and waste of time,—if we grant that, it is nevertheless obvious that such a man, being unprincipled, would use his power not for life, but for destruction—the destruction of himself and others. He would be as the giant who could impiously hurl a rock against the heavens higher than could any other being; and like the same giant, he would be slain by the fall of that rock, the swifter, the deadlier, from the greater elevation it had attained.

From this we are led to the consideration of another necessity (8thly), that of honour and a sense of responsibility. There is no principle we all more cherish than our honour; and it is evident you must agree with me in the influence of it, both in the study and practice of art. For whatever tends to banish jealousy and detraction from among the followers of art, and thus to unite them, must necessarily be to its benefit, because it is the cause of strength. There can be no doubt that an honourable feeling towards each other—a liberality which allows of mutual assistance—a generosity that can not only bear another's advancement, but also aid to bring it about—these are things of the greatest importance. If space sufficed I might dilate on the noble rivalry of Cicero and Hortensius, and of a thousand other mighty antagonists, to prove what is here asserted. But as it cannot be well disputed, and there remains no need to argue, let us consider the practical worldly advantage of honour to the architectural art. It appears to me to be, or that it ought to be, a main security against professional theft. In the literary profession, a man who should plagiarize even the work of the dead, is sure to encounter reproof. Though we should be glad to give others the benefit of our ideas, it is not right that they merely repeat them, because that is an injury to art. In architecture you seem to have, independent of honour, no security against the grossest imitation: so that it follows, if a man's honour prevent him stealing the ideas of others, that he must work for himself, invent for himself; and thus, honour prevents indolence, increases labour, enlarges independence of thought, and lends an increased action to the whole profession. There is also an honour a man owes to himself. Some, having raised a building at their outset, build six more exactly like it—copy themselves; which is often the case in ecclesiastical architecture. Here, then, is a decrease of art in the individual: let us extend this practice, and we shall have a decease of art in general. Only imagine a man publishing the same book seven times over, with but an alteration of the title! And yet we sometimes find built by the same man the castle of indolence, the tower of sloth, the palace of idleness, the temple of dreams, the house of slumber, the abode of laziness, and the fortress of sleep—all of them singularly expressive of their titles—six of them superfluous, and raised in direct opposition to public right and private honour. We now come to the necessity of a sense of responsibility—the keystone in our arch of necessities. In what has been previously urged this was so plainly suggested, that there remains little to express. We have said that care in our works was owed as a duty to the public—that with respect to purpose, a right regard of our powers of public instruction was owing to the source whence

they are derived. We may add, that all the rest are owing to ourselves. As I doubt not you agree in these three remarks, I will at once say, there is then established a triple responsibility, and it shows that a regard of duty is as necessary in the study of art as in anything human else. There is a discipline for the host of peace as well as of war. Let not the soldier neglect to polish his arms—let him not sleep on his post, save he would die; let not the man of art—the soldier of peace—forget to brighten and keep bright the weapons of his mind: let him not waste his time, save he would virtually die—become civilly extinct—exist as a cipher. There is then a duty for both. A sense of this duty is the crown to all our attainments, and let me deliberately say that without it they are worthless—they are as the powers of the fallen Son of the Morning—consummate, but for ruin! *

"NATURE ALL DECEPTION."

SIR,—In case it should escape the notice of better men, or be deemed beneath their notice, I cannot let pass, without some effort to expose its fallacy, the blasphemous comparison (for I know not what milder term to use), by which, in a paper on "Decoration," which you lately reported, it was attempted to justify the so-called "decoration" that consists in making cheap materials counterfeit costly ones. The argument (if any be meant) is this:—

1. The heavens, which pretend to be a dome, are only a sham dome.

2. The rainbow pretends to be an arch, but is only a sham arch.

3. *Ergo*, "*all nature* is deception."

4. And hence, it is proper, in human architecture, *sometimes* (whenever we cannot afford as rich materials as our neighbours, or as rich as we wish to be thought), to use counterfeits (observe the superiority of art which only *sometimes* deceives, to nature which *always* does so).

Now, without examining the logic of these inferences (which I fear would not satisfy Mill), I presume that if the two premises be disproved, the whole fabric founded on them may be left to its fate.

"The concavity of heaven, the rainbow itself, was a deception." A deception (according to Johnson) is a deceiving, and to deceive is "to beguile, delude, mislead, or lead into error." Now, then, grant that a child or a savage, viewing the heavens, is misled, and led into the error that he sees a clumsy, meaningless blue *cul de four*. What misleads him? The sky, or his own poor gross and grovelling mind, that cannot travel beyond its little circle of homely commonplaces? Again, grant that Ptolemy, with a mind enlarged by the stored experience of ages, and the arts of a civilised empire, is still misled, though less misled; that he sees in the same spectacle an apparatus of "crystalline spheres," dome enclosing dome, with all manner of eccentric motions, and driven by the most simple and refined machinery the then state of human art and science could image. What deceives him? The celestial appearances, or his own narrow, clumsy, clockmaker's-shop ideas of motion? And so with every successive step towards seeing the appearance aright. Copernicus, with a mighty enlargement, reduces our all-important earth from spectator and mistress, to a subordinate actor and appendage: Newton sweeps away the cumbrous human mechanism of domes and wheels: a further stretch of mind realises that this whole system is but a speck, one star: another reduces Newton's universe and its million systems to a handful of the dust of the galaxy: Herschel sees this galaxy to be one of a thousand: the universe of yesterday becomes a mote in that of to-day, and the universe of to-day a mote in that of to-morrow: the appearance (*i. e.* the notion man's littleness can obtain) approaching continually nearer the truth, that must ever transcend infinitely his puny grasp, and therefore be ever (according to Mr. Ballantine) "*a deception.*" As well might an infant call anything he cannot understand in his elders, or a savage, anything he cannot understand in civilised life, "a deception." Nature's appearances deceive us not: it is we who deceive ourselves.

There is no such thing as a deception or false appearance in all nature—every natural appearance is true, for it follows invariable laws (known to be more general than *any others* are known to be, *even those of gravitation itself*), and without such laws vision would be useless, not able to convey or telegraph to us external truths. The appearances, I say, are all true; and the simple proof is, that they *do* eventually reveal to us the truest notions of each thing that our minds are capable of receiving. The truth is always discovered *by* the appearances, not *in spite of* them. I will go further and assert that, either no other appearances could give us notions so true, or no others could do it so soon or so easily to us. Whoever denies this, the *onus* lies with him to show how the laws of optics could be improved, and what appearances anything (the heavens, for instance) could wear, that should give to any class of minds a truer idea of the reality, or as true an idea with less trouble. Till this has been shown, no appearance in nature can be called false or deceptive: it is solely the spectator's ignorant, hasty, and false *theory* which is deceptive; for the mere optical appearance of the sky, or any other natural object, conveys no idea, true or false: the idea is formed by memory and comparison, and other mental processes. What the thing shall *seem to be* depends not on itself, but on the spectator's mind; and whatever he takes it for, that is not *its appearance*, but *his theory* of it. It is not the object that *looks* falsely, but I that *see* it falsely.

I can only now think of one parallel to this in architecture. It is that which Mr. Ruskin calls "a difficult case of conscience," viz. whether the Gothic vault-ribs be right, in leaving uncorrected that idea of *flexure* and *elasticity* which the ignorant falsely receive from them (and which was the foundation of Warburton's once famous theory). This is plainly no fault of theirs, but of a rash and partial generalization by which the spectator deceives himself. It disappears as he forms truer notions of the Gothic system, and is therefore no more a deception than the mistakes we make in viewing nature.

But what analogy have these to the deceptions that Mr. Ballantine admires? If I mistake a rainbow for a tangible object, the fault is in my poverty and grossness of mind, not the rainbow's want of clumsiness and grossness; but if I mistake a painted fir door for one of rosewood, or a starred ceiling by night for the sky (not very comfortable) where's the falsehood now? In my want of sharpness, or the owner's want of honesty and his miserable substitutes for invention?

There is another slight difference between the "deceptions" of nature, and those which, in Snobland, are considered art. Everything in nature is better and richer than it appears (or rather than we see it). The heavens indeed, are not the savage's dome of sapphire; but what then? are they less? No; infinitely vaster, grander, richer, and more elaborate. The rainbow is neither the solid arch that the child sees it, nor the coloured vapour that the savage sees it, nor the phantasmagorial image on a screen of cloud that civilised men still see it; but more fine, artificial, superficial, delicate, and wonderful than even the most cultured philosopher sees it. And this is to warrant the making things *appear* something *more* than they *are!!!*

The school to which Mr. Ballantine belongs, is, I am aware, so flourishing in this island, and so much more so here than anywhere else, that it has the best right to the name of "British School." Its fundamental doctrine is, that everything should *appear at first* more and richer than it *is*. But everthing in true art *is* more and richer than it *at first appears*; and everything in nature, more and richer than it *ever* appears. These I will maintain to be general differences distinguishing the three things,—false art, true art, nature.

As for the other reasons (if such they can be called) put forth in the same paper to support the same fallacy, they are so very pitiful, that they must surely be its last legs, or nearly the last. If an art is to be esteemed because it has "almost arrived at perfection in this country," pocket-picking has especial claims to our notice. All people too (except architects) now know that if the usage of "250 years" is to sanction any thing, there is neither right nor wrong in the world. The calling in such aids as these, therefore, to any cause, only betrays its weakness. But this is specially the case with the present. Mr. Ballantine can trace back the history of these paltry substitutes for art, for 250 years, to the "time of James VI." Very well. Now every artist knows that from 300 to 250 years ago, exactly, a great and most important change was passing over our national tastes, and was completed on the accession of that same James; a change which (though *inevitable*, and even the *best* that could be devised at the time) is now, by all parties, without exception, deplored, either by itself, or as a step in a continued downward progress. This was the change from an effete, but still *real* style of art, to a *sham* one—from a degree of truth just above zero, to one just below it. To assert, therefore, of any artistic practice, that it has been used in this country just 250 years and no more, is at present, to all parties, one of the best arguments *against* it that could be found.

But for Mr. Ballantine's "250 years ago," I will, out of sheer pity, give him 2,000; and grant him that his graining and marbling was practised all that time ago in Egypt, and 1,500 years ago in Rome; and probably, in some place or other, at every period since. The question is, "were they ever used except in a declining state of civilisation—a retrogressive, materialising, animalising state of humanity, or of some branch thereof?" The test I will propose is this—were they ever used in a society where the gods were honoured with more art than the public, and the public with more than individuals?

The only remaining argument is, that there was "something gained, he held, in making a common fir door resemble some rare and beautiful wood so closely as not to be discovered without minute inspection, as a homely material, destitute of all beauty, had, at little cost, been converted into an object of admiration." The material is "destitute of all beauty;" so is that of the finest statue, picture, or cathedral. What is not done with the material of these cannot be needed with the material of the door. It is for the artist to beautify *objects*, not *materials;* and if the *door* be "destitute of all beauty," its designer is no artist. But, by beautifying the material instead of the door, you say that he (or rather the grainer for him) makes it "an object of admiration." Admiration! By whom? Who ever admired the graining of Lord Snobkin's door? Or if any body did, where would he be thought to have come from, but out of a painter's shop? The crowning absurdity of these things (as of a thousand other of our so-called "refinements" and "luxuries" and civilised "wants") is, that they are *never admired by any one*—are never thought of after being once done and paid for,—never (as Mr. Ruskin says) fix an eye except painfully. They have no more connexion with beauty or ornament than the stamps on a "German silver" spoon. They are merely examples of that ineffably paltry wealth-mimicry peculiar to Snobland, that makes her the world's laughing-stock (or will do so this summer)—that "ornamentation" which, if gold were of the colour of rust, and this colour inimitable, and iron the colour of gold, would gild it as much as ever. This so-called "art," which is as natural to us as the air we breathe, is peculiar to the "nation of shopkeepers"—to the great corruptress of the world's taste, and the lands within the immediate circle of her baneful influence. Turks, Chinamen, savages—all would laugh it to scorn. I have had no opportunity of asking any friend who has been in the East, but nevertheless will venture to assert (and I hope any of your readers will correct me if wrong) that Mussulman architecture and decoration, the poor, degenerate descendants of the fairy arts of Granada, effete and dotard

* To be continued.

though they be (like ours in the reign of the last Tudor), still ignore these pitiful subterfuges,—that the Turks are too civilised for them.

I do not mean to defend all the "Lamps;" I cannot but look on three of them ("Sacrifice," "Life," and "Obedience") as great smoke diffusers, and consider none of the others (except one, perhaps) free from that noxious product; but the "Lamp of Truth," I will insist, cannot be trimmed too much, or allowed to shine too far. Some Demetrius, no doubt, will say, it was not very benevolent for Mr. Ruskin to attack "things on which (in his own words) whole trades depend." I have read of a pious bishop, who, when measured by a tailor, in a time of preposterous buttoning, not wishing to be taken for a dandy, asked to have only the buttons necessary for use. "Then, what is to become of the button-makers, my lord?" "Very true," said his lordship; "then button me all over." Now, who was right, the bishop or Mr. Ruskin? I am persuaded that the latter is. All trades, crafts, or professions, founded on (or partly supported by) fictions or fallacies, *must* (in as far as they are so supported) share, sooner or later, the fate of Diana's shrine-makers, the West-Indian slave-owners, and the "protected" of every kind. Nature defies all the fashions in Paris, and all the protective laws in the world, to prevent this; and she says to every set of men who are worked in order to be paid, or make themselves work to be paid; "will you 10,000 be sacrificed, or your 15,000 successors?" Is it not, then, a Christian and benevolent act to hasten a decision for the former? If a bough must be pruned for the good of the tree, shall it be first left to grow larger?

Among the miserable fictions called refinements in language, is one that requires the expression, "*to find employment*," to be substituted for the honest Saxon, "*to find pay*;" and this seems, at length, by help from below, to have led us to the monstrous doctrine of making work in order to pay for it (as if there were in England too little to do, instead of too little to eat)—a fallacy which Heaven grant may not destroy us, but I fear it is sapping our very foundations. "*It gives employment*" is now the general excuse for every absurdity that sucks human blood for nothing and that we are too lazy to shake off. A thousand things, useless to mind or body, are to be "kept up" for the sake of those they pay, as if anything were paid for except by the sweat of some labourer! Miserable delusion! The rich have actually come to be told it is their duty to patronise follies for the sake of the folly-fed (as if the payers were not poorer than the paid)—thus reducing the rich man's office to an identity with that of the incendiary, whose devilry this devil's doctrine justifies. For what is the difference, whether I set fire to a rick, to give men the employment of producing another; or wear 100 useless buttons to give men the employment of making them? I render profitless to the world that labour which would otherwise be profitable.

In some ancient states, every one was obliged to be taught some craft or art,—some means of profiting the bodies or the minds of men; and some complain because *a few* among us are taught no such thing; but no one mentions the *very many*, the myriads, that are taught, instead of this, only some means of getting pay for doing things profitless to mankind. *These* are the drones *really* fattening on heaven's poor,—these, the busy industrious drones, that swarm a hundredfold beyond the few maligned idlers in prisons and mansions. *They* have not the mouths to suck enough to hurt, if they would. They only err in becoming the distributors, like the well-meaning button-covered bishops. But we all take part in this man-destroying work. We are all more or less guilty as distributors, mostly as suckers too; and these it is in the power of every one of us, silently and harmlessly, to help to weed out of the world.

As all true art is of the good things descended from above; so is all false art, of these blood-sucking fallacies, ascended from below. Hence the practice of the former and avoidance of the latter, is by no means a mere matter of good taste. I will insist that it is a matter of political economy, of morality, and of religion.

There is a vast deal of this busy dronehood in our art of architecture and all connected with it, which those who keep their eyes open will see must be sacrificed sooner or later, and therefore the sooner the better. There is a vast deal, I say, but not enough (at least not if we now begin weeding it out) to have needed the remarks lately made at the Institute of Architects. Instead of craving the indulgence of laughers, I *defy* them to "laugh architecture and architects away." Laugh on, by all means, and get a Cervantes, or as many as you can find, to laugh with you; but you will find our art is not yet, like "Spain's chivalry," to be "laughed away." As for the "new art" of engineering, that base and cowardly surrender of greatness to littleness, of mind to matter, that striking of the colours that man, as long as he pretends to be more than an animal, is bound to keep hoisted against all imperfections, immaterial as well as material, I tell you that, in spite of it all, man does not yet live on bread alone. I tell you that the art, which has borne the brunt of three thousand winters, laughs at this thing of yesterday, and will outlive it. I tell you that the child, and once sacred servant of God-worship, effete and degraded though she be, will yet see the end of that monstrous offspring of mammon-worship. I dare you to laugh your worst: laugh away all you can of architecture; that is just what she wants,—a thorough riddance of all that can be laughed away, and you will find *that* at the bottom which is not afraid of a laugh.

As a first step towards such riddance, I would suggest that, as a question of fundamental importance is now laid bare, by Mr. Ruskin's distinct statement of one side, and Mr. Ballantine's on the other,—as we have (to me a legal phrase) *joined issue*,—as the point is one on which every artist *must* hold one side or the other, there being no possibility of a compromise, no middle course between *some* deception and *no* deception;—that every artist should forthwith give in his adherence to one side or the other,—to England's doctrine, that art is to deceive, and the more perfect the deception the more perfect the art,—or the world's doctrine, that in perfect art there is no deception, and in perfect deception no art. This done, I propose that the minority should secede, renounce even their former name, or adopt a distinctive one, and thus enable the public to follow their own choice (just as they now do between architects, builders, or engineers), and trouble them no more with discussions.

CALOTECT.

THE NEW BUILDING OF THE LIBRARY, SAINT GENEVIEVE, PLACE DU PANTHEON, PARIS.

It was in the year 1843 that the French Chamber voted a credit of 1,775,000 francs for the reconstruction of the oldest library in Paris, which was entrusted to M. Labrouste, architect. It was stated at that time, that a mere restoration of the ancient building would have been preferable; and it is even now matter of regret that the galleries of the old library have been abandoned, as they were favourable both to the service of the establishment, and conjointly favoured contemplation and meditation—qualities whose want France seems to have reason to regret. But as M. Labrouste has now executed his task to general satisfaction, and not only has not exceeded, but has even *saved* something of the original estimates, former doubts justly have been completely silenced. M. Labrouste is known as having gained the great architectural prize at Rome, for his controversy with M. Quatremère de Quincy, and from having arranged the funeral ceremonies when Napoleon's remains were transferred to Paris.

The new library of St. Geneviève has the form of a rectangular parallelopipedon, where the principal façade occupies one of the longer sides. In the middle of the opposite façade another much smaller square building is erected, and in this the principal staircase is placed. The edifice is only one story high, under which is a ground floor. The southern front is pierced by thirty-seven arched windows, and contains the principal entrance. In the construction of this building a large quantity of cast-iron has been introduced. Even from the outside, the presence of iron manifests itself in the form of large *paterœ*, resembling scrolls. The iron *paterœ* of the ground floor alternate with the stone *paterœ* above, and rich festoons of flowers and fruits are suspended to them, and extend around the whole edifice. On the principal façade, and on both the lateral ones, the intervals between the windows are occupied by tables, on which are inscribed, in sunk characters, the names of 810 authors, belonging to all nations, and arranged in chronological order. Beres opens the array, and Moszelius concludes it. The building is surmounted by a range of stone shields—a sort of ornament also to be met with in the interior, which, in conjunction with other details, prove that it was the Doric order from which M. Labrouste deduced the idea of his work.

On both sides of the space into which the principal entrance leads, are the relievos of two candelabra, in commemoration of the proposition of M. Salvandy, made in 1838, to open the library during the evening. The door is of bronze, cast by Messrs. Simonet & Son. The decoration is very original. In the upper part two lilies, nearly full bloomed, are to be seen projecting over a festoon, which tallies with the other ornaments of the four angles. A *patera* of iron placed over the arch of the door bears the inscription "1848." Three steps lead to the vestibule, which is supported in its length by two rows of fluted columns, which, with some alteration, result also from the Doric order. Here some painted ornaments, whose tone resembles that of Etruscan vases, follow up that system which the exterior has already indicated, and thus the decorative plan of the able builder is gradually developed. The columns of the vestibule change now into the form of pilasters, as they become engaged in the lateral walls. On each of the two walls alternate Doric pilasters and niches, where busts executed in stone are placed on pedestals. The twenty busts represent the notabilities of French litterati and savans, as St. Bernand, Montaigne, J. J. Rousseau, Laplace, Cuvier, &c. They have been sculptured in the ateliers of Messrs. Elschöet, Merlieux, and Mallet. The *plafond* is painted with a pale azure, and in the part of the wall left blank, M. Desgoffes, *paysagiste de style*, has been commissioned to paint the culminating branches of trees and plants, either remarkable for their symbolic meaning, or the beauty of their foliage and flowers, or the sweetness of their fruits. It was a happy idea to crown *thus* the heads of the illustrious of their country, transforming, as it were, the vestibule of the new library into a pleasing walk, leading to agreeable study and fruitful meditation.

The vestibule is lighted by two windows, one of the arch which is over the door, and by the light which falls from the top of the chief staircase. Four side doors, two on the right, and two on the left, open in the vestibule; those of the right leading to the department of the manuscripts and drawings; those of the left to that of the printed books. These two compartments of the ground floor are again subdivided into two galleries, running in the axis of the longer façade, in a transversal gallery and a vestibule. Of the three galleries destined for the MSS., the transversal one is reserved for the readers. It is lighted by eight windows, and supported by two columns of iron. Ascending the eight steps, which lead to the first landing-place, the following inscription is placed on the wall:—*Bibliothèque Sainte Geneviève, fondée par los Génovéfains en* 1626, *devenue propriété nationale en* 1790; *transférée de l'ancienne Abbaye dans cet édifice en* 1850. Four steps more lead us to the second landing-place. A staircase, divided into two flights, unites at the door of the great reading-room. The ceiling of the staircase is also painted azure, intermixed with stars. The balustrade is here of iron, and one of stone is in the last landing-place, over which stand four candelabra of

terra cotta. The wall which is opposite both entrances of the first floor is to receive three copies after Raffaelle, one "The School of Athens," painted by M. Paul Blaze.

The large reading-room is composed of two galleries, extending in the direction of the axis of the principal façade. It is of striking appearance and extent, being not less than the famous Salle des Pas Perdus in the Palais de Justice. Seventeen arches of iron, supported by sixteen columns of the same metal, and of the composite order, separate the galleries. Other transversal arches of iron are connected with the listel of the capitals of the central columns. All the pedestals are on two of their sides ornamented with roses. The decoration of the other sides is of a varied character. The two galleries communicate with each other by the two extreme arches, and by the three of the middle, the opening of the former being twice as large as that of the other fifteen. At a height of 1 mêtre 35 c. the remaining twelve arches are occupied by the cases of the library, and by twenty-four heat conductors, having the appearance of elegant chimneys. The other repositories of the books running along the four internal façades, are surrounded by a railing. They cover the lower portion of the walls to a height of about 4 mêtres. There are six tables in each of the two longitudinal galleries, and one in each of the others. Every one has room for thirty-four readers. The floors of the two reading-rooms, those of the MSS. and prints, are of inlaid wood, and pipes of gas issuing from the midst of the tables will light the place during the evening hours, and the whole library is capable of accommodating *one thousand readers*. The rooms of the ground floors are 7 mêtres high; the hall of the first room is nearly 10 mêtres high; and the floor extends to a length of 78 m. 10 c. Each gallery has a width of 5 m. 59 c. The extreme arches have an opening of 8 m. 72 c.; the remainder only one-half. Taking all the above into due consideration, we cannot but congratulate our neighbours on the completion of this original and well-conceived structure.

NOTES IN THE PROVINCES.

THE Chelmsford Board of Health have resolved to "procure such a survey of the town to be made as will be in accordance with the instructions of the General Board of Health, by the Ordnance office."——Mr. Ranger has presented his report on the question of supplying Southampton with water. The report, according to a Hampshire paper, enters fully into the whole subject, giving a comparative estimate of the expense, &c., of the various plans proposed—results of analyses of different waters—costs of conveying same—and also report on the well on the Common. Mr. Ranger recommends, as the result, that water be obtained from the Mansbridge lock, on the Itchen, above Swathling. The report is to be printed.——A motion is about to be decided on by the Southampton Council for advertising an offer of a premium of 50*l.* for the best plan, &c., for converting the public lands into places of amusement and recreation: another motion on the same paper relates to the establishment of a cattle market; and another is for petitioning Parliament for the repeal of the window tax.——Stedham Church, near Midhurst, built under the superintendence of Mr. J. Butler, of Chichester, architect, was consecrated on Sunday in last week. The former church, being much too small for the population of the parish, and otherwise inconvenient, was taken down, and the present structure, which furnishes accommodation for 300 persons, was erected chiefly by the liberality of the Misses Payne, of Rother-hill. It is built in the earlier style of pointed architecture, and has a nave, chancel, tower, and south aisle.——A subscription fund for erecting a new church in Fisherton-Anger (Salisbury) is progressing favourably; and an eligible site will probably be obtained, and the building commenced, during the present year.——Fear of danger from powder magazines appears to be very prevalent just now. "Public attention," says the *Times*, "has been aroused to the extremely unguarded and dangerous condition of the powder magazine at Laudore, near Swansea. This magazine, which contains a store of gunpowder amounting to nearly six tons, is situated in dangerous proximity to the South Wales Railway, from which it is distant only a few yards, and it is nightly passed by numerous workmen bearing lighted torches, and often carrying dangerous combustibles. The danger, however, is greatly increased at the present time from the fact that there is in the roof a hole nearly half a yard square,"—which we should think it not at all unlikely that a spark from a locomotive in passing might considerably enlarge.——At a recent meeting of the Liverpool Health Committee the Inspector of Nuisances reported the cleansing of 955 cesspools during the past week, and the reference of 1,316 middens and ashpits to the Building Surveyor for examination and repair, and the issue of 641 notes to persons whose middens were to be removed. He also reported that 81 nuisances complained of by the inhabitants had been inspected and reported on, that 100 nuisance notices had been served, and the reference of 46 others to the Borough Engineer for remedy by drainage, and 39 to the Building Surveyor for examination and repair. During the past year 1,054 cellars were examined, 158 of which were claimed as built or altered under the late Health Act, 650 were unoccupied, 187 were occupied, but without beds, in evasion of the law, and 59 with beds in them, in violation of it, and which will be again cleared.——With reference to the site of Islington-market, near St. George's-hall, at Liverpool, the *Local Times* says, "We have heard many artists and other people of taste express astonishment at the wonderful effect produced by the removal of the Old Islington-market, and utter fervent hopes that the land will not again be built upon. Certainly, injustice will be done to St. George's-hall if any buildings be thrown up on this angular piece of ground. The removal has produced precisely the effect that was required, for now there is an open space and an abundant play of light on every side. The site would be an admirable one for a statue to Sir Robert Peel, for an obelisk, or any similar object; but any larger erection would give the place a close, huddled up, and disagreeable appearance. The buildings of Islington-terrace might under the supervision of a skilful architect, be easily altered, so as to present a very handsome front, and to harmonise with the fine architectural specimens everywhere rising up in the vicinity. The squalid buildings at the top of Shaw's-brow could be replaced by some lofty erection which would effectually shut out the old windmill and other objects behind, and thus an air of completeness would be given to the whole place in this direction, and at comparatively little expense."——The new Baptist chapel, just erected in Great George's-street, Leeds, has been opened for Divine service. It is designed in the early decorated style of Gothic architecture, cruciform in plan, with north and south aisle, and fitted up with open seats or benches to accommodate 600 persons. The length of the chapel, from east to west, is 102 feet; width of nave and aisles 38 feet; transepts 60 feet from north to south; height of apex of roof, 56 feet: the walls are of stone: the cost of building and furniture is 1,700*l.*; that of the land, 1,100*l.* Mr. Thomas Shaw is the architect.——Plans have been prepared by the same architect for a new church which will probably be built at Thornton, on the site of the present church.——It is in contemplation to form a company for lighting the town of Olney with gas. The plan proposed is to raise 2,000*l.* in shares of 10*l.* each.——At a recent meeting of the Bath and Wells Diocesan Church Building Association, a grant of 100*l.* was ordered to be paid towards a re-arrangement of sittings in Wellington Church, by which accommodation has been obtained for 878 persons, the increase being for 288. The sum of 100*l.* the remainder of the grant of 200*l.* towards a re-arrangement of the pewing in Bridgewater Church, was also ordered to be paid. This church formerly afforded accommodation for 827: by the present arrangement there are 774 free sittings for adults, 151 for children, and 507 for other persons; making together 1,832. Grants were also made to Saltford and Milverton churches.——There is a probability of the little town of Usk being now lit with gas. A committee has been appointed to ascertain the expense of erecting the works: 2,970 yards of main pipe would be required.——Eight hundred of the inhabitants of Manchester have addressed a memorial to the Council, complaining of the filthy and unsatisfactory state of the streets of the town, and urging the necessity of more effectual cleansing, especially with the scavenging machines, already brought into successful operation.——A sculptured monument has been recently executed to the memory of the Rev. Dr. Stonard, late rector of Aldingham, Lancashire, by Mr. J. B. Robinson, sculptor, of Belper. The style adopted is the Perpendicular Gothic, with carved centre canopy, pinnacles, finials, &c. The stone is from the Mansfield quarries, used in the erection of the new Houses of Parliament, where Mr. Robinson was employed during six years.——A stained window, by Wailes, has been placed in the tower light of Elland Church, Halifax, as a monument to the Rev. Christopher and Wm. Atkinson, father and son, 47 years successively incumbents of Elland. The window consists of three lights, the tracery being in the perpendicular style. The first on the left is a representation of our Saviour's presentation to the Temple: on the right stands the high-priest with his hands extended to receive the infant, who is presented by his virgin mother, and behind her the figure of Joseph carrying a basket containing two turtle doves is just visible. Beneath the group is an angel holding a scroll, with the text, "His name was called Jesus." In the centre compartment is portrayed the baptism in the Jordan, while on the left is St. John the Baptist, pouring the water on our Saviour's head from a shell. All the groups are thrown out by a floriation of ultramarine.——The subscriptions for the rebuilding of Cockermouth Church now amount to about 3,700*l.* The Monarch Insurance Company having paid the whole amount of insurance, viz. 2,000*l.*, without any deduction for salvage, 300*l.* only is required to make up the necessary amount, 6,000*l.*——The Fawcett Schools at Carlisle were opened on Tuesday in week before last. The building is in the Tudor style of architecture—of red freestone below, and of red brick with white stone dressings above. There is not much expended on ornament. The schools are all on one floor; above the level of the West Walls, on which the building stands. They consist, first, of a boys' school and girls' school, each 45 feet by 36 feet, separated from each other by sliding doors, and 24 feet high to the ridge of the open roof; and, secondly, of an infant school, 38 feet by 22 feet 6 inches, at the north end of the building. This is lighted by a large four-light window at each end. The boys' and girls' schools are calculated to accommodate (at the rate of nine square feet to each child) 175 boys, and the like number of girls; the infants' school is calculated for 150 infants; altogether, 500 children. Mr. James Stewart was the architect. The contractors were, Mr. Thomas Robson, mason and bricklayer; Messrs. Cameron and Briggs, joiners; Mr. J. Choaks, slater; Mr. D. Blain, plumber; Mr. D. Clarke, ironfounder for the columns and beams of the roof; Mr. J. Blaylock, for the cast-iron windows; Mr. Henry Tweddle, painter, &c. &c.——Gutta percha pipes are now in use in St. Matthew's Church, Glasgow, for behoof of the deaf.——It is stated, in Moody's National Property List, that a house in Charlotte-street, Glasgow, has been sold by private bargain, at 1,590*l.*, for the erection of a Roman Catholic institution, or nunnery.——The various dissenting bodies in Newcastle, says the local *Journal*, seem disposed to locate themselves as near as possible to the Great Central Railway Station. A new Independent meeting-house is being erected in Clayton-street West, in place of the old one in Zion-court: the Baptist congregation, which meet in Tuthill-stairs, have purchased a site in the vicinity, at the rate of 27*s.* 6*d.* per square yard, and they will shortly

commence building: one or two other congregations have been looking out, it is said, for accommodation in the same neighbourhood.——A bridge has recently been erected at Haddington, by Messrs. J. and A. More, Gimmersmills, for the purpose of connecting these grain-mills with the town. The bridge is of wood-work, and rests on three stone piers. The cost is said to have been between 800*l.* and 1,000*l.*——It is proposed to erect, at Haddington, a covered market, about 6,000 feet square, or nearly two-thirds the area of the Edinburgh Corn-Exchange. The structure is meant to be plain, but substantial.——A meeting was lately held, at Arbroath, in the north of Scotland, in order to consider the propriety of erecting a model lodging-house for factory girls, when three of the inhabitants forthwith subscribed 10*l.* each, three of them 25*l.* each, and four of them 50*l.* each. Smaller sums were also subscribed, and a committee was appointed to increase the subscription. —— An English company, it is said, is about to light the town of Newry with gas made from water, at the rate of 1s. per thousand cubic feet!

THE NATIONAL WASHINGTON MONUMENT, NEW YORK.

At a meeting of the New York Historical Society, on the 5th November (reported in the New York *Literary World*), Mr. J. B. Varnum read a paper upon the National Washington Monument and other kindred subjects, from which we obtain the following particulars:—

Since the laying of the corner stone, about two years since, the work has regularly progressed. The foundation is at the bottom 81 feet square. It is built of a species of blue rock, a material which is continued up 17 feet above ground. Here the marble work for the obelisk commences. This obelisk is to be 500 feet high, 55 feet square at the base, and 33 feet square at the top. The walls are 15 feet thick at the commencement, leaving a space inside 25 feet square, which will be of the same dimensions all the way up. The obelisk is now 76 feet high, and it is anticipated that at least 50 feet will be added during another season.

The outside is constructed of what is known as Symington's large crystal marble, procured from the vicinity of Baltimore. The main body of the wall is of blue gneiss, and with this the interior is lined, except where blocks presented by states or associations have been inserted. The quality of the material and its capacity to sustain pressure and resist frost were most satisfactorily tested in some experiments made at two different times, under the direction of the department of the Interior.

Thirty states and one territory have determined to present blocks of stone to be inserted on the inside, of which five are already in the wall, and nine are on the ground. About fifty associations have requested permission to make similar donations, and a number have been received. Some of them are of elaborate workmanship and beautiful material, almost every prominent kind of stone or marble in the Union being there in one or more specimens.

There have been expended on the work up to this time 120,000 dollars. The estimated cost of the whole shaft will be 500,000 dollars.

A large additional subscription was received on the spot from visiters, within a week or two after the passing of the compromise bills, which seemed to indicate that zeal in the cause increased in proportion as the prospects of preserving the Union were brightened.

In the city of New York, a gentleman distinguished for his liberality, the purchaser of Washington's farewell address, headed the subscription with 500 dollars; but the agent only succeeded in collecting altogether about 1,500 dollars in sums of 50 dollars, 20 dollars, and 10 dollars.

The monthly receipts from all parts of the country now average about 2,800 dollars, and if they continue to come in to that extent, very fair progress will be made on the work, as the sum already expended was much of it laid out on the foundation, in providing a steam-engine, and securing a stock of materials.

In reply to objections urged against the monument, Mr. Varnum said, if you take the mass of mankind you find but a small number, comparatively, who study books of any kind, especially history, and of those who do read, comparatively few preserve a distinct recollection of prominent characters and leading events. Upon such persons objects presented to the senses make the greatest impression, and a monument or a painting leads to inquiry, and keeps the subject constantly before the mind. But it is a mistake to suppose that the chief object of a monument to an individual is to preserve his memory. Is it not rather a memento of the value set upon the deceased by those who reared the obelisk, a testimonial of the appreciation of him by those who survived? The best evidence of patriotism is a disposition to make some sacrifices for the cause we believe to be just; and so the best evidence of gratitude is some voluntary offering from our treasures, something more than the mere empty thanks which cost us no individual effort to bestow. Hence the monuments which are by far the most interesting in their associations, are those which have been erected by voluntary contributions,—not by an appropriation from the public treasury, which, though all are taxed for it, no one feels,—but by some little personal sacrifice. A mere pile of rude stones, each of which is brought by a different individual, speaks much more forcibly for the respect entertained for the dead than a gorgeous monument built by the decree of a parliament or the will of a ruler.

Every city in Europe is filled with monuments; but very few of them are the work of popular enthusiasm, or commemorate anything more than a royal visit, or an exalted rank,—monuments erected by town councils or the owners of property around particular parks, as acts of civility, sometimes of servility.

There are in London some thirteen statues of sovereigns—four of the brothers of sovereigns, four generals, and one philanthropist.

Many monuments in Europe were reared by the individuals they were intended to honour. Napoleon was not at all modest in this respect; but his monuments commemorate others besides himself—great events—great generals, brave legions. He knew well how to minister to the pride of the soldier, and excite a thirst for glory. His noblest monuments are the splendid bridges and elegant edifices he built in various parts of his empire. But the effect his triumphal arches have had on the soldiery is sufficient evidence that monuments exercise no small influence. History is full of such evidence. Were there no monuments but those erected by voluntary contribution, there would be very few indeed, and these few would commemorate real merit.

In America there has generally been a sentiment favourable to such erections. The monument at Bunker Hill, the Battle Monument at Baltimore, and the Naval Monument at Washington, have already been erected by voluntary contribution. An equestrian statue to General Jackson at Washington is now about being cast in bronze, and we have seen how, almost without observation or notice, a beginning has been made in the National Monument.

Besides these there is scarcely a large city in the country where something of the kind is not proposed; and the difficulty has generally been that the plan adopted was on so extravagant a scale as to render it doubtful whether any subscriber could ever see it completed.

South Metropolitan Schools Competition.—For the information of your correspondent, "T. S. Edwards," I beg to state that I was the successful competitor for the above schools; and I am surprised that it is needful to ask the question, because every competitor is entitled to know the name of the architect whose design is selected in any competition whatever; and this information might have been obtained if asked for, though I think it should be supplied without the asking. The idea of building is not abandoned, but is only in abeyance, in consequence of some legal impediments as to site, funds, &c. I quite agree with Mr. Edwards's sentiments in respect to competitions.—Edwin Nash.

COMMON SENSE IN ARCHITECTURE.

It is probable that the members of our profession generally will not think it necessary to make any reply to the communication of Mr. Fergusson in The Builder of last week, as it carries its own refutation with it: nevertheless, for fear the public, both British and foreign, should consider that we all acquiesce in the observations it contains, I venture to trouble you with a few remarks thereon.

The principal, nay, for aught I can see, the only reason why Mr. Fergusson lauds Mr. Paxton for the design of the Exhibition Building in the Park is for discarding all precedent and avoiding the sin of copyism. Now, has Mr. Paxton done this, and has he struck out anything new? I do not hesitate to say no.

Either, as Mr. Fergusson observes, "he was profoundly ignorant of or profoundly despised Vitruvius and his disciples," probably the former, as I am unwilling to think so badly of Mr. Paxton as to imagine that he would despise talent in another; and therefore, knowing little of architecture as a fine art, he fell back on the only precedent at his command, and gave us a copy, on a gigantic scale, of a greenhouse, without any claim to beauty either in its general mass or its details, with the exception only of the great transept, and that, as Mr. Fergusson allows, was the suggestion of Mr. Barry; and he further admits that "had Mr. Barry's idea been adopted of carrying the same roof down the whole length of the *central aisle*" the building would then have had some pretensions to architectural beauty,* and yet in the very next sentence Mr. Fergusson proceeds to say that Mr. Barry could not have made a satisfactory building of it, and that for the marvellous reason that he was an architect!

I do not write to find fault with Mr. Paxton's building, the real merits of which, those of being weather proof and suitable for the purpose of the Exhibition, will be sufficiently put to the test ere long; but simply to assert that no new principle has thereby been evolved, and to express an earnest wish, that if common sense is to lead some of us to the wilful destruction, without remorse, of such buildings as the Parthenon and Cologne Cathedral, merely to retain and admire our modern works, the remainder of us may be endowed with sufficient good sense and love for the noble buildings that have been left us by former generations to defend them against all such barbarous attacks.†

Raphael Brandon.

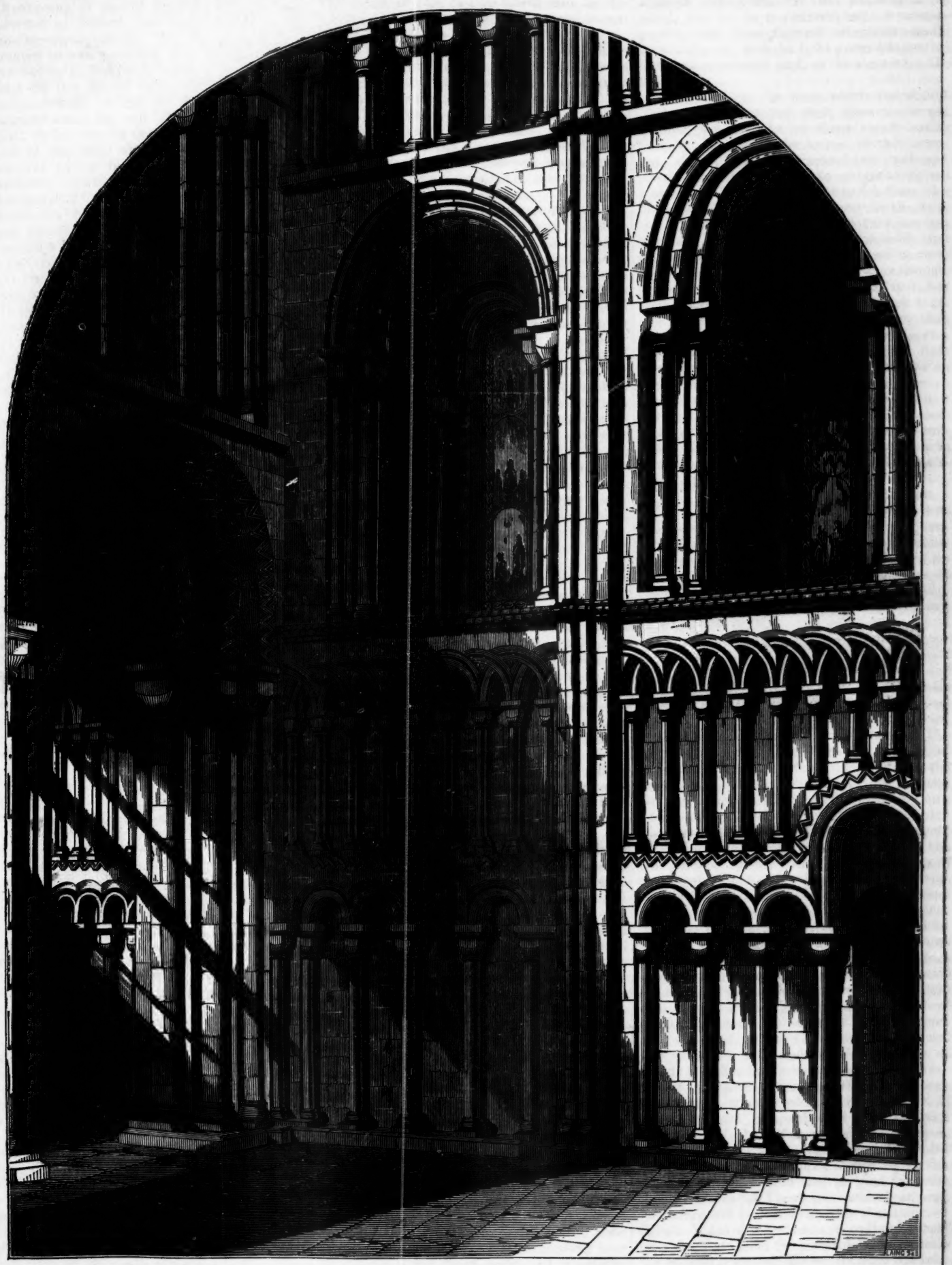
SOUTH-WEST TRANSEPT, ELY CATHEDRAL.

We have from time to time noticed the progress made in the important restorations going on at Ely Cathedral, and have also occasionally given illustrations of some of the most interesting portions. Annexed we give a drawing of the interior of the south-west transept. We doubt if a more striking specimen of its particular period (Norman) can be met with in any of our English cathedrals; and yet, until within the last few years, this portion of the building was totally neglected, and, we believe, divided from the nave by a high wall: this has been removed, the whole of the stone-work cleansed and restored, the windows filled with painted glass, and every effort made to reinstate the transept in something of its original beauty. At the time of our visit the small chapel on the east side was undergoing a careful and substantial restoration. A flat ceiling divided into panels has been placed over the transept, and several experiments as to colour

* This form of greenhouse would have reminded any one who had seen it very forcibly of the beautiful one lately erected by Mr. Decimus Burton in the gardens at Kew.

† Three other letters on this subject reached us too late for consideration. It is surely unnecessary for us to say, that we are not to be understood as concurring in all the communications we publish.

ELY CATHEDRAL—THE SOUTH-WEST TRANSEPT.



have been made in these panels. These experiments are all more or less failures; and it will behove the dean and chapter to give this part of the work their most attentive consideration before they come to a decision. The paving of the transept and chapel are still in a bad condition, and detract much from the general effect.

Our readers will remember it was during an examination of this part of the cathedral that the late Mr. Basevi met his death: an enamelled brass of exquisite workmanship has lately been placed in the south aisle of the choir as a memorial of this gentleman.

There is hardly anything which conduces more to the comfort of either architect or artist in visiting a building of this description than the presence of a *well-informed* and obliging verger. At Ely, it seems to be the principal aim of the person holding that office to give every information and assistance in his power. Having often had occasion to avail ourselves of his good offices, we think it right to bear this small tribute to his merits.

DOINGS IN IRELAND.

THE Queen's University at Belfast (a view of which has recently appeared in THE BUILDER), is one of the three colleges lately erected in Ireland, and comprehends the following arrangements. On the ground-floor, central on west elevation, is an entrance-tower, 17 feet by 17 feet (with porter's room adjoining, 16 feet by 12 feet), which leads to an entrance-hall, 54 feet by 26 feet, with which a grand staircase, and lobby to examination-hall, 34 feet by 12 feet, communicate: to the left of the hall, is a hat and clothes room, 48 feet by 12 feet, with a door leading to cloisters, off which the lecture-rooms, four in number, 37 feet long by 27 feet wide, with professors' retiring-rooms, 25 feet by 10 feet, are situate. The cloisters terminate at the northern wing, which contains the following apartments: — Philosophical apparatus-room, 20 feet by 20 feet; laboratory, 33 feet by 18 feet, and a students' entrance-hall, 31 feet by 12 feet, with staircase leading to upper lecture-rooms. At one extremity of this wing is a yard, 38 feet by 35 feet; a coal store, 28 feet by 12 feet; urinals, water-closets, &c. To the right of the entrance-hall, is the examination-hall, 80 feet by 38 feet, and 41 feet high, lighted by six windows, the lower ones having three openings, with arched heads, and label mouldings; and those above, which are also divided into the same number of compartments, are of a more decorative character. At the termination of the cloisters, and situate in the south wing, are the residences of the president and vice-president, containing entrance-porches, hall, dining and drawing-rooms, libraries, closets, &c., with sleeping apartments over, and kitchen offices in the basement story. The second floor contains a committee-room in entrance-tower, museum and library, situate in centre building over lecture-rooms, registrar's room, 16 feet by 12 feet, apparatus, and "chemical" apparatus rooms, lecture-rooms, &c. The height, to wall plate of centre building, is 41 feet, to ridge of roof, 53 feet; height of lower lecture-rooms, 17 feet; upper ditto, 21 feet. The cloisters extend 250 feet, and are 10 feet wide. Mr. Charles Lanyon, of Belfast, is the architect. The cost of erecting the building was 26,000*l*. Mr. Cranston Gregg, contractor.

The foundation stone of St. John's Church, Limerick, was laid on the 15th ult. The building, which is in the Norman style of architecture, will consist of a nave, about 70 feet in length, surmounted by clerestory windows, and having two side aisles. The chancel projects, and the central roof will be supported on arches and pillars of cut stone: there will also be a tower and spire about 90 feet in height. The interior of the roofs will be of open woodwork, stained and varnished, resting on cut stone corbels. The building has been designed by, and is erecting under the superintendence of, Mr. J. Welland, architect.

The Midland Great Western Railway Company have just completed an extensive store-house at the North Wall, Dublin: it is 140 feet long by 22 feet wide. The plans were furnished by Mr. Tarrant, engineer. Cost of construction about 800*l*. Messrs. Cockburn and Son, builders.

The Chetwynd Metal Viaduct, on the Cork and Bandon Railway, is progressing rapidly, and will be within 10 feet of the height of the Britannia Tubular Bridge of the Menai Straits.

The Poor Law Commissioners have decided upon erecting additions to the workhouse of the Granard Union, and the board of guardians are prepared to receive tenders for the execution of the works according to the drawings prepared by Mr. Wilkinson, architect.

A spacious building in Whitefriar-street, Dublin, has been converted into a training-school for the children of the poor: the building is divided into several distinct compartments. The lower section comprises a suite of spacious and well-ventilated school-rooms, fitted with all necessary accommodation, and finished in a tasteful manner. These rooms are fitted up with gas burners (for night schools), supplying abundant light, and which can be kept at a proper temperature by patent stoves. The upper story is occupied entirely by one large room, wherein the various industrial pursuits of the pupils will be carried on. The entire of this establishment will be devoted exclusively to the education and industrial training of the female children.

The board of guardians of the New Ross Union purpose erecting sundry buildings in connection with the workhouse; and have advertised for tenders for the execution of the works according to the drawings of the Poor Law Commissioners' architect.

The works on the Londonderry and Coleraine Railway are to be resumed immediately, and the opening of the line to Newtownlimavady may be looked forward to.

It is contemplated to construct a tower and belfry at the Roman Catholic Cathedral, Letterkenny, which has been lately erected; and also to purchase an organ for same: three galleries have recently been added, and a costly marble altar also. A sum of 3,000*l*. has been expended on the internal decorations, and subscriptions are now being raised for the completion of the works.

Dublin Mechanics' Institute.—The report of this body for the past year states that the number of members for the past year is 2,862, being an increase of 162 upon the previous year; that the issues of books for the past year amounted to 93,600 sets. The entire number of volumes now possessed by the institution amounts to 5,746. The contracts for improvements, alterations, gas fittings, &c., in the lecture-hall, are stated to be satisfactory, and the work is progressing under the direction of Messrs. Louch, architects.

NEXT TO FORM, COLOUR.

SIR,—Although my husband lives at Clapham, and exacts of me the closest attention to his cherished garden and conservatory, rarely allowing me to see the marvels of London, yet I stole away yesterday, when he was fairly off to his country-house, and paid a visit to the great glass building.

On entering the wide expanse, my eyes wandered over its details, and I could not help wishing that it was transferred to our common, and planted on our delightful paddock, which it would wholly cover in. Dear Mr. Bottomry's hobby at home (that is, our conservatory) is 40 feet long by 26 feet wide: it is attached to the south-east side of our house, which it covers in to the eaves; but I am quite out of conceit with it now: yet, Sir, I think that if the Painting Committee were to take a look at the style of its finish, it might aid them in choosing their colour, the last and the most effective of their operations.

My lady friends always apply to me for advice in the choice of their colours in bonnets, dresses, window-curtains, carpets, and even in the tint of their house decorations; and, to do Mr. Bottomry justice, he did admit my claims to discrimination, even in that of his pet conservatory. I had it done in a *verdatre white*, and all agree in lauding the agreeable repose which this tint confers, together with its lightness and accordance with all the floral and arborific contents.

Ladies are admitted to be the best judges of effect in laying on paint; therefore, observing a party, of whom one was known to me, discoursing on the experiments now in progress in the national conservatory, we at once held a conference on the subject—a true committee of taste on the palace itself—on which there was no dissent: all condemned the tawdry, gaudy, and meretricious mixture of *red, yellow, blue*, and a little white, now rapidly extending over the interior of the grand arch, and especially the yellow on the frames and styles of the top light, which gave a sickly hue to day: the sun, though bright, looked jaundiced through, and the whole appeared like wares of a Dutch toy-shop or a China joss-house.

I will admit that the blue with white lines looked light, clear, and elegant, but the top lights of (nearly sage) green are more refreshing and less obtrusive than any other colour: the blue and white on the traverse beams or girders are certainly the lightest, as the outer styles of white deprive these castings of much of their ponderous appearance; but the red yellow, and blue mixture, is only fit for the favours of a St. Alban's candidate or a Moorish Alhambra. If the building be to stand, and to be a conservatory, or winter-garden, then these *flagrant primitives* should be abandoned, and the light green adopted as the most consistent, and, at the same time, the neatest.

Now, Sir, as to the trees, which the skilful contractor has capped over, allow me to ask of what use it is to let them stand, seeing that by June next the leaves, if they come out at all, will have completely withered. These veterans are too old to endure so violent a change of habit: they must perish from lack of moisture—no dew nor shower for the bud, the bark, or the root! Possibly they are left to record Mr. Paxton's triumph, possibly that of the popular voice, and they stand as trees of liberty: they are, however, monstrously in the way, and can be of no value to either Exhibition or Winter Garden, since they never will (take my word for it) produce other than the crop they now bear—a crop of shavings!

The nurserymen and florists whom dear Bottomry largely patronises, all consult me on the laying out of pleasure-gardens for a scope of five miles round Clapham, and although not a judge of architecture nor of the *best mode of disguising a skeleton*, I claim my pre-eminence in *light* and *shadows*, and venture to communicate these remarks to THE BUILDER, as the best expositor for

EMMA BOTTOMRY.

P.S.—The learned disquisitions (lectures) on *primitive colours*, their accord for only "*one-third diameter of the bow!*" prismatic demonstrations and pragmatic deductions! have no concern with *taste*. Take a natural view of these things, but, above all, consult a lady. We were six in council at the Exhibition, and we all agreed in *this*.

FOREIGN INTELLIGENCE.

First official Prussian Report on their Exhibitors at London.—The head Exhibition Commission of Berlin have just published a report, of which we make the following extract. The number of candidates for the Exhibition amounts to 1872, of which 455 belong to the easterly, and 439 to the west part of Prussia. On ores and metals we find the following notices:—*Zinc.* Germany is still the country where this metal is most extensively produced. In Silesia there have been produced, in the year 1849, 452,546 cwt. of plates and bars of zinc, and 19,558 of rolled zinc. The royal mine of Königshütte will exhibit red and yellow brass ore (*galmey*) of different sorts. From Stolberg, also, in Westphalia, samples will be sent to London.—*Iron.* The Rhenish iron-works are the most important, whose productions amounted to 886,000 cwt. of cast iron, 797,000 cwt. of bar and rolled iron, and 117,000 cwt. of cast steel. The mining direction of Bonn will send in a series of iron ore, cast iron, and steel, and some collateral products. The extensive rail and puddling works at Hende and Sterkrade will exhibit many extensive samples. Silesia, which produces 894,000 cwt. of cast iron and 634,000 cwt. of rolled and slab iron, will send from Gleiwitz specimens of these famous works.—*Copper.* From Saxony, the Mansfeld mines will exhibit a series of the native copper schist, up to the worked copper.—*Lead* will be sent from the Rhenish works of Commern: white lead and lead ochre will be exhibited from the Rhine.—*Cobalt.* Washed cobalt ore and oxide of cobalt are announced from Schwarzenfels, &c.—Articles of bronze will chiefly be sent from Bavaria. Gold and silver wire will be sent from Nüremberg.

Ornamentation of the Cathedral of Cologne.—As this splendid building and its completion are still considered as one of the national boasts of Germany, the ladies of Cologne (*Frauen und Jungfrauen*) have woven some tapestry to adorn the cathedral with. The designs have been made by the conservator, M. Ramboux, the details of ornamentation by the painter, M. Welter. The archbishop, on receiving them from a deputation of the ladies, introduced in his speech the

passage from Exodus: "But there came from amongst the women and maidens those who were skilled in weaving and embroidery, and they brought carpets made by their hands," &c.

Libraries for Hospitals on the Rhine.—As it has occurred to the managers of several hospitals, that patients of active habits will recover sooner and in greater proportion than the apathetic and lazy, small libraries have been established at the Sta. Cecilia Hospital, Cologne, and elsewhere. It has been generally found, in all libraries destined for people of the humbler walks of life, that if a label be placed on the cover, *earnestly* but *kindly* requesting the clean and attentive preservation of such books, they will not become untimely soiled, which is one of the chief impediments of the general introduction of *libraries for the people.*

The Mass of Gold existing in Europe.—Professor Nöggerath, of Bonn, has recently calculated the *bulk* of gold at present in circulation. He states, that the whole amount of gold and silver coin throughout Europe is 320,000,000*l.* sterling. Assuming, as the professor does, that the half of this sum, 160,000,000*l.* is gold coin, this, if cast into a solid mass, would form a cube, whose sides would form lines of 26 feet, 9 inches, 8¼ lines, Rhenish measure. The produce of the Californian mines in 1850, amounting to 7,500,000*l.*, would make a cube of 9′ 8″ 1‴. The produce of the Russian mines of the same year being 4,000,000*l*, a cube of 7′ 10″ 1‴. The Californian and Russian gold of 1850, in fine, cast in one mass, would form a cube of 11′ 1″ 10‴.

Canalization of Rivers, and other Hydraulic Works in France.—After the example lately set to the French by England, they have even adopted the term *drainage*, and begun the utilization of their waste lands. On the other hand, the French Government have perceived, that unless they attend to the extension of their ways of communication, the agricultural produce would be of little avail. Thus, since the year 1835, the large sum of 192,000,000f. have been voted for the improvement of river navigation. Still, the French press truly states, that, according to the geographical position of France, the works for regulating the rivers and other water-courses would be amongst the most extensive and important in Europe. The following are a few of the principal works to which the above large sum has been applied:—The Shelde (l'Escaut), from Cambrai to the frontier, 1,800,000f.; Moselle, from Frouard to the frontier, 1,000,000f.; the Ill, from the end of the canal from the Rhône to the Rhine, to the entrance in the Rhine, 1,400,000f.; the Seine, from Marsilly to Rouen, 7,000,000f.; between Nogent and Paris, 5,000,000f.; the Seine on its passing Paris, 5,000,000f.; between Pont du Grenelle and Rouen, 10,300,000f.; between Rouen and La Méilleraye, 1,500,000f.; between Villequier and Quillebœuf, 3,000,000f.

REMOVAL OF FOUL AIR FROM WELLS.

Amongst the suggestions which have appeared in your paper, in regard to means for the removal of foul air in wells, that urging the use of *a revolving fan* is the best. This, as you know, is nothing more or less than the common "Blow George," which has been known to miners for perhaps fifty years, and was used at the mouths of all the shafts (about twenty) of the four tunnels recently constructed within a mile and a half of this place (St. Leonard's-on-Sea). While the shafts were being sunk they did their duty tolerably well; but as soon as the "headings" were driven a few yards, then their incapacity became very apparent. One life was lost; and very many of the men were seriously ill in consequence of the prevalence of noxious gases and the scanty supply of pure air. To remedy this, the contractor, Mr. Newton, invented a machine at once simple, inexpensive, and which forced down shafts 150 feet deep, and along the heading, 150 feet more, such a volume of atmospheric air, that at a distance of five yards from the end of the pipe it would blow a candle out. This "air pump" is fully described and illustrated with a diagram in the *Mechanics' Magazine*, dated July 14, 1849. I will describe it as clearly and briefly as I can.

It consists of two boxes about 3 feet square, one fitting into the other. The outer one is half-filled with water, which renders it air-tight, and assists in floating up the inner one. On the top of the inner one is fixed a "valve box," with the valve opening inwards, so as to admit the air, but not to allow any to escape. Through the bottom of the outer box, and rising above the water in it, is a pipe, also with a clack in it, which communicates with a zinc or gutta percha tube that runs down the shaft and along the heading to the point where the air is to be conveyed.

The operation of the machine is this:—when the inner box is raised it becomes charged with air: when it is pressed down, the air is forced through the only point of egress, viz., down the shaft (very like the common bellows): by a simple mechanical contrivance the windlass or jack roll of a well may be made to work it. In the case of the tunnel it was worked by a crank attached to the shaft of the "gin" pulley wheels, and was made double, so that a *continuous* flow of air was effected: for ordinary wells, however, this is not required, a single one answering as well. I may add that the cost of constructing it is only 3*l.*, and with a proper counterbalancing weight, but very little is added to the labour of the men at the windlass. W. Butt.

TESTIMONIAL PORTRAIT TO MR. THOMAS CUBITT.

The portrait of Mr. Thomas Cubitt, painted by Mr. Pickersgill, R.A. for the Builders' Society, and to be presented by them to Mr. Cubitt, as a testimony of their respect and esteem, has been engraved by Mr. G. R. Ward in mezzotinto, and each subscriber will receive an impression from the plate. The picture, already mentioned by us, is a full length, and represents Mr. Cubitt standing in an accustomed attitude, the right hand in the vest. Mr. Ward has executed his task very satisfactorily; but the likeness, although still very good, is not quite so striking as it seemed to us in the picture. The society are indebted to Mr. W. Herbert for the care with which, as treasurer, he has carried out their views. Mr. Cubitt has done so much for the improvement of London, he has ever shown so much solicitude for the welfare of the large body of operatives employed by him, and he is so estimable in every relation of life, that there are necessarily many who would gladly possess themselves of his portrait, if it were obtainable; and we therefore venture to suggest to the Builders' Society, that if they were to allow a certain number of impressions to be sold, they would gratify many persons, and raise a fund which might be applied to some useful purpose.

Wood Pavement.—The necessity of relaying and renewing this pavement might, to a very considerable extent, be obviated if proper precautions were taken in ballasting the foundations. The present mode is to bed the wood on a thick layer of concrete, say six inches thick, laid on the unformed and vegetable earth, than which nothing can be more absurd: with rolling weights it becomes a ruin at once. If the roadway were ballasted with two feet, at the least, of good concrete, and the wood properly laid in frames, I will venture to say that it would wear well, and the public generally would soon appreciate the advantage of absence of noise, jar, and vibration, and ease of traction, which are, or might be, the distinguishing characteristics of wood paving. If the roadway were formed with a proper degree of curvature, and kept properly clean, it would always be dry.—R. L. S.

A Monster Saw.—Sheffield is active in contributing articles of its industry for the Crystal Palace. Messrs. Spears and Jackson are having a circular saw made with segment joinings of 5 feet in diameter, to be the centre of well-finished smaller satellites of starry-edged teeth. This will, it is supposed, be the largest circular saw ever manufactured.

THE ORDNANCE AND CIVIL SURVEYORS.

SURVEY OF SWANSEA.

Can any of your readers inform me who has been the successful competitor for the Survey and Mapping of *Swansea*, for drainage purposes, advertised in your columns a few weeks ago? As one of the parties who have tendered for it, I certainly expected an intimation ere this, as to the result, through some channel or other, but as yet am totally in the dark. Can it be possible another insult as well as injury has been offered to the civil surveyors of the country, by handing over this borough to the tender mercies of the Ordnance, leaving the former respectable class, who have paid heavy premiums for (as they imagined) a respectable and lucrative profession, either to remain in comparative idleness, or submit to *a salary* of 3s. or 4s. a day from the Ordnance, under the superintendence of some Corporal Casey, or some Colour-serjeant Smith. Really, sir, this is too bad, and should not be any longer submitted to. We have passed with patience some disheartening years, for want of employment, and no sooner does the prospect of improvement present itself, than some meddling colonel or some grasping captain, in connection with his corps, steps in, and instantly vanishes all future hope of a contract for the educated expectant civilian. If the Ordnance be so anxious for employment, in God's name let them proceed with the National Survey of England and Scotland, so long in embryo, and leave such towns as Swansea, Coventry, &c., to the men who not only have the best right to it, but are infinitely superior in point of accuracy, style, and every other necessary character and bearing of the work. Witness the numerous glaring, destructive, and mischievous errors in the Ordnance levels discovered by civilians in the Sewers'-office, Greek-street, a few days ago, and hushed up by the Commissioners, on account of the Ordnance influence with that assembly. I wait to be enlightened as regards the fate of the Swansea tender; and should it be, as I anticipate, in the hands of the Ordnance, trust that you will, in connection with the entire profession, give your advice and assistance against such an unjust monopoly.

A Civil Surveyor.

*** We have received three other letters on this subject. One writer states he has received printed notice his tender was not accepted.

A VISION IN TRAFALGAR SQUARE.

I would offer to your notice a suggestion for the improvement of Trafalgar-square. I would begin with the National Gallery, and if I could not turn all the horse traffic from the front and sides round by Charing-cross, I would simply bring out the front portico of the gallery with a splendid flight of granite steps down to the road, and would curve the road there as required around the steps: I would finish the sides and tear away all the spiked rails. I would then take in hand the sides and front wall of the enclosure, and throw all down to the level of the road above, and begin from that with easy steps again to the base; the whole steps to take the horse-shoe form. For the base I would clear away all the water apparatus and lay down a simple well-paved surface, sloping sufficiently towards the column; and the whole would give a splendid amphitheatre. Then should I be glad to hear an orator-worthy, from the pedestal of the column, deliver an oration on the genius of the hero whose effigy stands on its summit.—Penrhyn Aston.

Porcelain Cottages for the Poor.—Could not some ingenious brick or brown-ware makers adapt the plan of using long slips sliding in grooves to cheap cottage building for the rural poor, by employing lengths of coarse ware, fitting in grooves of timber or iron framing? I do not mean that the walls should be no thicker than a single plate of the ware; but to have an inside and an outside set of plates, with the interstice filled in with clay or any cheap stuff that would hold together.—W. S. M.

SPANISH ARCHITECTURE.

DOORWAY, VALLADOLID.

CARVED ORNAMENT, TOLEDO.

ILLUSTRATIONS OF SPANISH ARCHITECTURE.

ANNEXED we give two illustrations of Spanish art. The first is the Entrance to a Palace in the town of Valladolid. There are many of these Roman-looking arched doorways in the northern towns of Spain, in Segovia especially. The arch stones are of great length.

The second is a portion of ornament from the interior of the church called "El Transito," Toledo, formerly a synagogue, built in a mixture of the Gothic, Moorish, and Hebrew styles, at the beginning of the fourteenth century.

THE ARCHITECTURAL EXHIBITION.—It is found difficult to obtain a gallery or room for exhibition, in consequence of the great demand for such places this year, in expectation of the coming men. It is to be hoped, however, that this difficulty will be removed. The non-members of the Architectural Association, who have agreed to act upon the committee are, Messrs. Allom, Ashpitel, Billings, Christian, Fergusson, Godwin, Lamb, and Scott.

LIVING IN FLATS.

HAVING had experience, while residing in France, of the comfort, convenience, and economy of living in apartments, or chambers, or a flat, I now take the liberty of addressing you, to inquire why we should not enjoy the same advantages here. What is it that sends the greater part of the London tradesmen through the Bankruptcy Court? The rent of their premises. A tradesman in Regent-street, for instance, is obliged, in taking a shop, to take a large house with it, of which, in case of a dull season, he cannot let the apartments: he, therefore, has a double loss, not only by doing less business, but by having all the unnecessary rent, rates, &c. to pay, from not being able to let that part of the house which abroad he would not have been obliged to take.

Now, had Regent-street been built with one line of handsome shops, with entresols for the tradesman's family if required, and been connected or not with the shop, the streets running parallel with Regent-street built of a class so as to have had the entrance to the upper part of the Regent-street houses in them, and have had kitchens and all necessary offices on each floor, so that they might have been as distinct from the shops and from each story as separate houses,—both landlords and tenants would have benefited by it.

Now for the advantage of living on a flat. You only require one half the number of servants, there being no running up and down stairs to answer the street-door, the entrance-door being invariably against the kitchen-door, generally having the kitchen-door on one side, and the dining-room on the other, so that the servant can answer the door while not losing sight of her cooking. The economy in fires, an invalid being able also to go from his or her bed-room into the adjoining room, when, had they to go up or down stairs, they would not be able to do so, and a hundred other conveniences I have not time or space to mention.

Now, again, as to Model Lodging-houses, and also as to a suggestion to make a street of them in the new street from the end of Farringdon-street. I say, why not make a line of shops which would repay for the outlay, and over them build your model lodging-houses? Again, as to the improvements in the City, viz. Watling-street. Why not build, as in Paris, houses right through from street to street, the ground and first-floor warehouses, the second-floor apartments for the managing men, the third for superior clerks, fourth inferior ones, fifth for your porters and labourers, with apartments fitted up as in the model lodging-houses: you would then have much less complaint about the integrity of your men, as I am sure there is no greater incentive to vice than uncomfortable dwellings. Were the houses built more in the above style in the City, I am sure they would be much more valuable. G. C.

*** This subject has been treated of at some length, our readers will remember, in previous volumes of our journal, but as yet nothing practical has been done. At one time we had the names of more than twenty persons anxious to co-operate in obtaining such dwellings. As a matter of course these would require to be fire-proof.

THE STRENGTH OF THE EXHIBITION BUILDING.

INSTITUTION OF CIVIL ENGINEERS.

ON the 21st Jan. this subject was discussed at the Institution of Engineers.

On the one side it was contended, that the present Building was not in accordance with the conditions published by the Royal Commissioners; that from its form the wind would have a most injurious effect on it, and therefore, that instead of testing each girder singly, as had been done, the whole roof should have been subjected to an ordeal. The snugs for receiving the ends of the girders were considered as being too weak, and liable to fracture. The foundation of concrete under each column was considered insufficient, and not in accordance with the original design. The columns of such slender dimensions as eight inches diameter, and varying from one inch and an eighth down to half-an-inch in thickness, and each composed of seven parts, must be unstable when carried to such heights as sixty-four feet.

The girders of the galleries, when under the action of the multitudes of persons all in one direction, would acquire an undulating motion, which would fracture them. It had been stated by the Royal Commissioners that a building would be provided, free of rent and fire-proof: the latter condition was certainly not fulfilled, and if the building remained uninsured, each exhibiter would be under the necessity of providing for the safety of his own goods, and thus be subjected to a greater expense than the ordinary rent of a really fire-proof building.

On the other side it was contended, that an examination in detail of all the parts of the structure demonstrated the fallacy of the objections which had been made. Every part had been attentively considered, and had been subjected to careful and minute experiment The concrete foundation had been tested to the extent of seven tons per square foot with-

out crushing, whilst the greatest weight that could be brought upon each square foot of foundation was only two-and-a-half tons: this was supposing the building to be crowded with visiters, and the roof covered with a depth of two feet of snow. The columns had also been submitted to similar experiments: their thickness varied from half-an-inch to one inch and an eighth, according to the duty they had to perform, and the position they occupied in the building. It had been calculated, that the greatest weight which could possibly be brought upon the strongest column was sixty tons, whilst its breaking weight exceeded 300 tons.

On the 28th the discussion was renewed, and was continued throughout the meeting.

Arguments, based on calculation, were adduced to show, that though the Building was amply sufficient for resisting any vertical pressure to which it might be subjected, it was not so well calculated to resist the horizontal force exerted by the wind, which might be taken as sometimes equalling 25lbs. per square foot. It was said that the Building in Hyde Park was the most extensive example in existence of the "pure rectangular construction," but as it did not possess the strong gable end walls of the Lancashire Cotton Mills, which were also rectangular structures, composed of columns and girders,—the stability of the glass structure must depend entirely on the simple rectangular form, which could only be maintained by the perfect attachment of the girders to the columns. It was contended that the snugs by which this was effected were wanting in strength, and the columns not being attached to, or rooted into the ground, might be supposed to admit of lateral motion. The addition of further strong diagonal bracing was therefore recommended, as being necessary to insure that amount of stability requisite in a building intended for the circulation of such multitudes of persons as would attend the Exhibition.

SOCIETY OF MASTER CARPENTERS.

THE METROPOLITAN BUILDINGS BILL.

The usual meeting of the members of the Master Carpenters' Society took place at the Freemasons' Tavern, on Wednesday, the 29th ult., attended by Mr. Nesham, president, Messrs. Higgs, George Bird, Burstall, Norris, Outhwaite, Lever, and others. After the preliminary business was concluded, the President informed the Society that, by direction of the members at the previous meeting, he had written to Lord Seymour, and received a reply, saying that his lordship intended to propose an alteration of the Metropolis Buildings Bill in the ensuing session of Parliament. Some of the members expressed their anxiety for a speedy alteration of the present Bill, that some relief may be obtained in the altered size of the rates for small buildings which is contemplated in the new Bill; but the majority were more anxious about the result of the inquiry which they were informed by The Builder was taking place as to the defects in the constitution of the present Court of Registrar and Referees, and they hoped that the strongly expressed objections of the Society and the building interest to the position of the registrar and referees as proposed in the Bill of last session would receive further consideration.

REPEAL OF THE BRICK DUTY AND PREVIOUS CONTRACTS.

I should feel obliged if you will answer me the following question:—A contract having been made for the erection of a *building* prior to the repeal of the brick duty, and before the building was completed, the duty was taken off: would the person with whom the contract was made (the employer) be entitled to receive the duty which the contractor had been repaid, or any and what portion thereof? A. W.

*** The Act will be found in full in our last volume (VIII.) p. 257, but for the information of more correspondents than one, we reprint the clause referring to the point in question:—"And whereas various contracts have been made before the passing of this Act for the sale and purchase or requiring the use of bricks, and such contracts have been made on the assumption that the duties of excise on bricks payable by law at the time of making such contracts would continue: be it enacted, that the maker or seller of or person using any bricks by or under such contract shall, and he is hereby required, from and after the 26th day of March, 1850, to make an abatement from such contract, equivalent to the duty from which he will be relieved under or by virtue of this Act, in respect of all such bricks which he shall send out and deliver or use under or in pursuance of any such contract as aforesaid after the 27th day of March, 1850 (that is to say), for and in respect of all such bricks, if any, which at the period last aforesaid were in the field, yard, or premises where the same were made and charged with duty, a moiety of the said duty charged thereon, and for and in respect of all such bricks which shall be made at any time after the 27th day of March, a sum equal to the duty of excise which at the time of making such contract was payable on bricks of the like description."

BELFAST EXHIBITION OF MODERN WORKS OF ART.

The following is a list of the pictures which have been sold, up to this time, at this Exhibition, the opening of which we mentioned a short time ago. "Rienzi in the Forum," Elmore, A.R.A., 150*l.*; "A Brook in Wales," H. J. Boddington, 15*l.* 15s.; "A Study," J. Sant, 36*l.* 15s.; "Waiting for the Ferry," C. Branwhite, 31*l.* 10s.; "Snowdon from the Vale of Dinas, near Bedgelert," F. H. Henshaw, 31*l.* 10s.; "View of Brathay Bridge, Ambleside," W. J. Blacklock, 24*l.*; "Stormy Weather," H. Hewitt, 10*l.* 10s.; "The Entomologist," W. S. Watson, 20*l.*; "A mountain Pass at Abar, near Bangor," A. Vicars, 5*l.* 5s.; "Compton Wynealis, the ancient Seat of the Marquis of Northampton, Warwickshire," F. H. Henshaw, 8*l.* 8s.; "Scene in the Cloisters of St. Maclou," R. Brandard, 15*l.* 15s.; "The Sister's Grave," J. Sant, 52*l.* 10s.; "Sunset, near Lanwest," Alfred Vickers, 3*l.* 3s.; "St. Peter's," the late J. Atkins, 5*l.* 5s.

BATH CITY WATERWORKS.

CONTRACTORS' ACCOUNTS.

The last number of The Builder contains a statement under this head, to which, as it is calculated to injure me in the opinion of the public, I feel called upon to offer a reply. There are two modes by which false impressions may be given—*suggestio falsa* and *suppressio veri*. The statement in question, of the *ex parte* character of which I have a right to complain, belongs to the latter, containing matters which are not untrue in themselves, but concealing others calculated to give a very different aspect to the business. It states that the award made was 1,132*l.* being a deduction from my claim of 1,833*l.* 6s. 4d., but wholly conceals, that the corporation, under the direction of its professional advisers, offered me only 22*l.*, and that the award was upwards of 1,100*l.* in excess of their tender. Does this not show the case was one in which it was difficult to arrive at a right conclusion? The truth is, in the progress of the works alterations in the drawings and specifications took place to such an extent that the completion occupied eighteen instead of six months, as agreed to under the contract. Foreseeing that disputes might arise respecting the value and measurements of works which would be concealed under ground, and that I should have great difficulty (if, indeed, it would be possible) afterwards to prove such; I repeatedly urged the architects to meet me and settle, from time to time, during their progress, the value of the alterations: this in all cases they failed to do, and hence the difficulty and injustice which have resulted to me. After receiving a certificate from the architects of the completion of the works, and finding no disposition on their parts to enter into my accounts, I furnished the corporation with a detailed statement of all works done in excess as well as in diminution of the contract, and I afterwards showed, upon oath, that my total claim was 387*l.* 13s. 6d. less than the net costs of the works, such loss to me being caused, not by the lowness of my contract (which was founded on good prices, as was admitted), but from the constant alterations made and the indecisive mode in which the works were carried out.

About ten months after my claim was sent in, I received the offer of *twenty-two pounds* as the balance due to me: a reference became inevitable, although I knew, when I proposed it, that, from the length of time that had elapsed, from the nature of the work done, and from other difficulties in my way, I should not be able to prove all the items (in number nearly 300), and that injustice to some extent must be done me. I have now been for ten years engaged in the prosecution of large works, and this is the first time I have ever had with any architect or engineer the semblance of a disputed account. I must, of course, submit to the pecuniary loss I have, as I conceive most unfairly, been subjected to by the Bath Corporation, but I cannot afford to have my reputation damaged. I trust, therefore, you will give insertion to this explanation.

Wm. Baker.

THE MARBLE ARCH AT CUMBERLAND GATE.

I am happy to find my suggestion, made some months ago in the highest quarter, has resulted in placing the Arch at the Northern Entrance to Hyde Park, and I think it ought to receive, on completion, the appellation of "The Royal Victoria Arch." It only remains now to surmount it with an equestrian statue of Her Majesty, which would be a national and suitable memorial of our beloved Sovereign, and I hope, ere long, to see this carried into effect.

I hope, Mr. Editor, you will again call public attention to the unfinished state of the Wellington Statue, which requires a balustrade round the top of the pedestal, and which, with a staircase added, would give the great influx of strangers we expect this year an opportunity of inspecting the gigantic work of art, which they are unable now to do from its great altitude: a moderate payment to ascend would prove a source to supply funds in aid of the great Exhibition.

Hoping we shall go on improving until our public edifices show something like good taste,

I am, &c.,

Hyde-park Place. John Laurie.

*** We cannot participate in the satisfaction felt by our correspondent as to the resting-place of the Marble Arch. The site chosen is not a good one. It is a very bad one, as it seems to us. But resistance is useless: the public are to have no voice in such matters.

With respect to the *gates* given by Mr. Hope, we are informed that these, together with two new pairs of gates, will form side entrances; so that there will be *five carriage approaches*, forming an extended line, the Marble Arch being in the centre. An amusing arrangement truly!

THE PAVILION AT BRIGHTON.

The town of Brighton, as our readers know, purchased the Pavilion from the Government for 53,000*l.* The contract was finally signed on the 9th of September, 1849. The town has, since then, put the building into order to fit it for public entertainments, and on Tuesday, the 21st ult., it was opened with a ball.

The original Marine Pavilion, as it was then called, was commenced about the year 1784, under the superintendence of the late Mr. Holland, architect. It consisted of a circular edifice, standing between two adjoining buildings; that to the south having been the house first hired for the occasional residence of the Prince of Wales, and that to the north a new erection, as well as the centre, which was surrounded by an Ionic colonnade and entablature, supporting statues, and crowned by a dome. After that period the Pavilion progressively underwent an entire change: the former structure gave way to the buildings

which now form the Pavilion, and which were erected at different periods from the designs of the late Mr. Nash, architect. With the exception of the minarets, nearly the whole of the edifice is of brick, stuccoed. Of the taste displayed in it, externally, the less that is said the better. Amongst the principal apartments is the *Chinese Gallery*. This is 162 feet long and 17 feet wide. The banqueting-room is 62 feet by 42 feet, and 45 feet high; the saloon is 55 feet by 30 feet; and the music-room 62 feet by 42 feet, and 41 feet high. The new decorations have been executed by Mr. Vick and Mr. Lambelet; some carved stone chimney-pieces by Mr. John Thomas; and the whole was superintended by Mr. Slight, the town surveyor. The local newspapers give a full description of the various apartments from Parry's "Coast of Sussex;" but, as we intend looking at them for ourselves on some early day, we shall not trouble our readers with any quotations. When we were last in Brighton we endeavoured to look in, but the policeman in charge, according to his own statement, "had no discretion," and we had not time then to apply to those in authority.

THE PEEL MONUMENT AT MANCHESTER.

On Friday, the 24th ult., the committee met to determine on the design to be adopted. There were sixteen statuettes to choose from, and ultimately the one sent by Mr. W. Calder Marshall, A.R.A., was selected for execution. According to the local papers the committee had considerable difficulty in coming to a decision in consequence of the excellence of the models contributed. Each of the models, in compliance with a resolution of the committee, is surmounted by a statue of the lamented statesman, and most of them represent him in a speaking attitude, with a scroll in his hand. The successful design represents Sir Robert in a Roman robe, and in his right hand is a bill, upon which are inscribed the words, "Criminal law consolidation," in commemoration of the part the late Right Hon. Baronet took in carrying out that measure. At the base of the pedestal upon which the statue is placed are two figures, and various productions emblematic of the extension of commerce, machinery, manufactures, and the fine arts. The whole of the designs were exhibited to the public on the 28th.

RAISING WATER.

One of your correspondents, I see, inquires whether a seven or eight horse steam-engine will draw water from a pond about 800 yards distant. If the joints of the suction-pipe be well put together, there is no doubt that the engine will draw the water; but the best way of supplying the engine would be to lead the water from the pond to a small well or reservoir close to the engine, by a pipe laid in the ground below the level of the water in the pond, which, as your correspondent says the ground is nearly level, would be easily done. This would prevent the inconvenience that might probably arise if the engine were to cease working for some time, as in that case, from imperceptible leakage of air through the joints and clacks, the pipe might empty itself of water, and thereby cause loss of time and waste of power in having to be refilled when the engine recommenced working.

J. A. D.

A correspondent points out Carrett's steam-pump as particularly adapted to the case in question. He says:—There is one of these machines at work, which fetches its water a similar distance, and also from a depth varying from 20 feet to 26 feet. This water so fetched is forced into steam boilers at 50 lb. per square inch. It is impossible to fetch water these long distances by common means, without having a pump to work very slowly, to give the column of water in the suction-pipes time to stop and start at *each successive stroke*, or, on the other hand, have *three lesser pumps* in *neutral* connection, producing a *constant current* along the suction-pipe.

Books.

Tables for Calculating the Cost of Iron and other Substances sold by Weight. By W. L. Simpson. London: Simpkin and Marshall. 1851.

These Tables, made with special reference to engineering and mechanical works, give the price of each cwt. up to 30, and of each quarter and pound, at all prices per cwt. from 1*s.* to 5*l.* at intervals of sixpence. The author states that, to insure accuracy, without which they would of course be useless, the tables have been revised by three persons. They should not be used so much for *direct* calculation as to form a *check* on calculations, *a great object*, when (as engineers frequently are) a person is alone, and unable to procure the necessary assistance in having his calculations checked by others.

The Forty-Five. By Lord Mahon. With Letters of Prince Charles Stuart, from the Stuart Papers, copied by the Author from the original MSS. at Windsor. Murray, Albemarle-street. 1851.

Having had our own professional fatigues not a little lightened and allayed by the fresh interest infused by Lord Mahon into a period of our national history itself of no little interest, we think we cannot minister more kindly or effectually to the every-day bothers of our professional readers than by advising them to recruit their energies by a refreshing dip into this little book, which, itself, is ready cut out, to the hand of the busy, from the Author's "History of England," being, in fact, the narrative of the insurrection of 1745, extracted from that history, and pruned from all excrescences or historical matters not immediately comprehended in the current course of the narrative.

The Museum of Classical Antiquities. London: J. W. Parker. No. I. 1851.

The first part of this new quarterly journal of architecture and the sister branches of classic art, contains papers on the Advantage of the Study of Antiquities; on the Polychromy of Greek Architecture, by M. Hittorff; on one of the Gates of Paestum, by Mr. Donaldson; on the Paintings in the Lesche at Delphi, by Mr. Watkiss Lloyd; on the Application of Polychromy to the Exhibition Building, by Mr. Falkener, &c.&c.

Journal of the Chester Architectural and Archæological Society.

This society have issued the first part of their journal, consisting of papers read at their meetings, and mentioned by us at the time. It is very fully illustrated, and makes an interesting book.

Miscellanea.

Ecclesiological, late Cambridge Camden Society.—Meetings of the committee of this society were held on December 16, 1850, and January 13, and were attended by the Rev. Dr. Mill, V.P., Mr. Chambers, Mr. France, Sir John Harington, Rev. T. Helmore, Rev. G. H. Hodson, Mr. A. J. B. Hope, M.P., Mr. Luard, Rev. W. Scott, and Rev. B. Webb. The publication of Part IV. of the new series of the *Instrumenta Ecclesiastica* was announced, and the contents of Part V. agreed upon. The committee was consulted as to the subjects of the embroidery, &c. intended to be prepared for the Great Exhibition, by Messrs. Newton, Jones, and Willis, of Birmingham, from the designs of Mr. Street. Designs for rebuilding Kingweston church, by Mr. Giles,—for a restored parsonage at St. Columb, and a new one at Ruan Lanihorne, both by Mr. White, were examined; and also tracings of some projected improvements at Kirkham. The Rev. E. D. Butts forwarded for inspection coloured sketches of some of the frescoes discovered in Netherbury church, Dorsetshire. They represented the Seven Corporal Works of Mercy, and the Seven Deadly Sins. In the drawing of "Visiting the Sick," a physician is shown in a long black robe, with a hood, lined and edged with (apparently) ermine round his neck. "Burying the Dead" is very curious, showing a priest with an attendant, four other figures, and a gravedigger with pickaxe and shovel. "The Seven Deadly Sins" are less well designed. Sloth appears to be carrying a large pillow on his shoulder—a very clumsy representation. The costumes are curious and very plainly indicated.

The Outside Colouring of the Building in the Park.—We understand that the outside of the building is to be painted blue and white; the wood panelling of the ground story being stained with Ibbotson's oak stain, dark outside and light inside, and varnished.

Water in the Exhibition Building.—For the supply of water, the Chelsea Water Works Company are laying a 9-inch main, with a column of 70 feet constantly on it, and a 6-inch pipe running across the building. A 6-inch pipe will run round the whole of the outside of the building, with sixteen branches into the interior, by which, with one length of hose, and without the aid of a fire-engine, they consider they will be able to control the whole area. A special arrangement has been made with the Chelsea Water Works Company for the water to be always on; and the Company have been at the expense of an additional auxiliary engine, for the purpose of insuring a constant supply; whilst in ordinary cases they are bound to supply 300,000 gallons per day.

Paperhangings in the Great Exhibition.—An important resolution has been come to by the Committee of Class 27, viz., That in allotting space to paperhanging manufacturers and decorators, no direct copies of foreign paperhangings or decorations shall be admitted for exhibition.

Institution of Mechanical Engineers.—The fourth annual meeting of the members of this Institution was held at Birmingham, on Wednesday week, Mr. J. E. M'Connell in the chair, when the secretary read the council's report, in which the members were congratulated on the satisfactory position of the institution. The number of members for last year was 202, sixteen of whom are honorary members, and three graduates. The formation of a library and museum is talked of. A donation of 100*l.* by Mr. R. Stephenson was announced, and some books were presented. The chairman intimated that the subscription for erecting a testimonial to the memory of their late president, Mr. George Stephenson, now amounted to 2,020*l.* He had good reason to hope that before long that sum would be doubled. Papers were then read,—by Mr. W. A. Adams, "On the Improvement of the Construction of Railway Carrying Stock;" by Mr. W. Parkinson, "On a Water Meter;" by Mr. R. Peacock, "On the Workshops for the Locomotive Carriage and Locomotive Departments of the Manchester, Sheffield, and Lincolnshire Railways;" by Mr. F. Bramwell, "On a Vacuum Gauge for Condensing Engines;" and by Mr. Barrans, "On an Improved Axle-Box for Carriages and Engines."

"Casting Painted Glass."—With reference to a letter from Mr. Deacon on the subject of stained glass, in a recent number, we are called upon by Mr. Pettitt to state that a wrong idea is given of his patent, and that he does not contemplate "casting painted glass on sand," as therein described.

Fire at New Parliament Houses.—Considerable alarm was excited on Monday last, by the breaking out of a fire amongst some timber in the Clock Tower of the New Palace; but, although it burnt pretty fiercely for a time, the damage, owing to the nature of the construction, will not exceed 100*l.* in all. The only injury to the building consisted of the cracking of a few stones. At first incendiarism was suspected, but the circumstance afterwards appeared to have been merely accidental—either from the overheating of a jointed pipe flue in the tower, or from an infringement of the regulation against smoking in the building. It is to be hoped, at all events, that a flue capable of even being suspected of such a trick will not be allowed to continue as it is, or where it is.

Fall of two Floors in a Manchester Warehouse.—On Monday in last week, an accident, fortunately not attended with very serious results, occurred in the warehouse of Messrs. Ormrod and Hardcastle, cotton spinners and manufacturers, at the corner of Pall-mall and Newmarket-lane. The warehouse in question is a building of five stories, including cellar. Workmen of Mr. T. Dale, joiner and builder, had been raising the floors. Five new beams of Dantzic pine, each 24 feet long, and 15 inches by 9 inches in thickness, were placed under the flooring of the top room, which is about 80 feet long. All the goods in the warehouse, consisting of calicoes, were piled in that room, during Saturday and Monday morning, so as to leave the other rooms free for the workmen. During the Monday, a number of joiners were working in the highest story but one, putting in new beams for the intended new flooring of that room. Three window-frames had been taken out, for the purpose of the arches of the windows being raised. While these and other men were at work in the different floors, a sudden and very loud crash was heard, the new beam under the end of the top room next to Newmarket-lane snapped in two, and simultaneously the flooring resting upon the beam gave way, and it and the pieces of goods piled upon it fell into the next room below. The flooring at the same end of the latter room gave way beneath the shock and the weight of the rubbish and goods falling upon it, and all fell into the next room below, where their further downward progress was stayed. One end of the broken beam, which rested in the brickwork between two of the windows in process of alteration, on the breaking of the beam, forced out part of the wall. A large number of bricks fell. Strange to say, scarcely any of the workmen or porters were injured. A heavy stone from the string-course fell into the carriage-way, and made a deep indention in the pavement. A few bricks fell into the street, but did no mischief, owing probably to their falling within a hoard enclosing the footpath before the warehouse. The accident seems to have resulted from the weight of goods placed in the top room having been too great for the beam to bear. It was intended, it is said, to put a pillar under the centre of each beam. The workmen had previously cautioned the porters against overloading the floor of the fifth story; and, after the accident, are stated to have declined to continue their work till that floor had been lightened.

The Metropolitan Movement for Abolition of the Light Tax not only continues, but has grown into "monster meetings." One of this sort was held in St. Pancras on the 27th ult. Large deputations were present from all the other metropolitan parishes. The Vestry-hall, at King's-road, Camden-town, in which the meeting was held, and which is calculated to hold at least 2,000 persons, was densely crowded. The chairman, Mr. Churchwarden Fraser, stated that the reason why St. Pancras, second to none in the metropolis, had not previously convened a public meeting was, that it was felt advisable to wait until the verge of the opening of Parliament, when the subject was being agitated all over the kingdom. As a medical man, he was opposed to the continuance of the tax, upon social and sanitary grounds. Darkness and dirt, ignorance, sickness, and crime certainly went hand in hand, and nothing so contributed to this and to the physical depression of the poorer portion of the people as the window-tax. If he wished to show the oppressive character of the window duties, he need only refer to the report of the Metropolitan Association for Improving the Dwellings of the Industrious classes, in which it is stated that "Sets of rooms in the inns of court, or the Albany, in Piccadilly, having as many windows, and being parts of larger houses, would pay only to the extent of 1¾d. per week out of a rental of from 80*l.* to 100*l.* per annum, while the tenants of the Metropolitan buildings pay 7¾d. per week out of a rental of from 13*l.* to 16*l.* per annum." After entering his protest against any attempt to introduce a house-tax in lieu of a window-tax, it was resolved by acclamation, "That light and air being necessary to existence, and the free gift of God to man, it is the opinion of this meeting that to tax these essentials is in opposition to every principle of morality; that, in the language of our forefathers, it is a badge of slavery, and a reproach to a people boasting of their freedom. That this meeting, therefore, calls upon the Commons House of Parliament to abolish for ever, without any substitute or modification, the impious, odious, and tyrannical tax on windows, and that a petition be presented to Parliament to this effect."——A meeting of the inhabitants of the united parishes of St. Andrew-above-Bars, and St. George-the-Martyr, was also held on the same evening, in the hall of the workhouse, Gray's-inn-lane, for the same purpose, and with the like results. On the Wednesday previous a meeting of the parishes of St. Giles-in-the-Fields and St. George, Bloomsbury, passed similar resolutions.

Actinism.—A fair correspondent, in the fairest of handwriting (which, having been sent to a profound professor of caligraphy, at the expense of thirteen postage stamps, is pronounced to show all that is nice), writes thus:—"In the *Household Words*, with reference to the building for the Exhibition, I find the word '*actinism*.' Dictionaries have been vainly searched for a definition, and wiser heads than mine confess themselves puzzled. Will you be so kind as to enlighten us?" The word is of too recent coinage to be found in the dictionaries. The solar ray consists of three distinct though associated principles, namely, light, heat, and another agent, which has been recently named the actinic principle. It is this agent that is supposed to operate more especially in the promotion of vegetative processes, which the light itself, in certain stages, retards and injures, while the actinic ray promotes them. Previous to the demonstration and denomination of actinism, it was called the chemical ray, and was supposed to have some peculiar relation to electricity. Indeed, it has been stated, in The Builder, that the actinic principle would perhaps be ultimately found to be *antithetical* to the electric. In this idea we have since been supported by experiments of some chemists, showing that the positive electric force had manifested phenomena analogous to *cold*, while the negative had equally exhibited effects such as those of *heat*, that is, in peculiar circumstances, in which each was likely to manifest its own peculiar mode of operation, without mixture with its opposite. Now the solar rays are altogether *radiant, as heat is*, and although, doubtless, the luminous and actinic principles are not mere heat any more than heat is light or actinism, still they are so closely analogous, that some men of science have insisted that the three principles are merely different phenomena *of one* agent. We hope our correspondent has now some idea of "Actinism."

Safety-Valves.—With reference to the continual recurrence of steam-boiler explosions, Dr. Murray, of Hull, suggests that the action of safety-valves might be improved if the waste or surplus steam, previous to its issue, were made to pass through a pipe traversing the hot-water in the boilers. The sudden emission of steam at a high temperature, he thinks, may have something to do with the explosion of boilers, and the gagging of the valve be dependant on the same cause. The necessity of *two* safety-valves to every steam-boiler is advocated.

Co-operative Labour Experiments.—As incidents peculiar to the age in which we live, we cannot but regard with interest the attempts made from below to find a more satisfactory solution of the labour question. It is a new and impressive thing to find the artisan mind of the country deeply involved in the abstract logic, as well as in the practical logic, of such a question. Certain we are, that this great question is as yet unsolved: and we are hopeful enough to believe that some contribution towards its better understanding may be drawn from the cogitations and the experience of the workers themselves. From the report of a meeting of operatives in Manchester we learn some curious facts in illustration of the progress of a doctrine often stated in our columns—to the effect, that the next great social experiment will be one of association. Three hundred men on the strike have taken a mill. We believe these few words will startle some ears like a report of barricades. Such a circumstance may or may not help to revolutionise industry; but it speaks of sobriety, union, character, and forecasting habits in the men. A factory is a costly affair. A vast change must have come over the factory population ere a man possessing mill-property could dream of letting it out to strikers. Much as we have seen and heard of the progress of Manchester during the last dozen years, we remember no fact so powerfully significant of advance as this attempt—however more or less wise or hopeful—at co-operative labour.—*Athenæum.*

A "Lost Friends Department" at the Great Exhibition.—Considering the great number of persons from the provinces, totally unacquainted with London, that will visit the Great Exhibition; considering that a great proportion will be accompanied by relatives or intimate friends; considering that many of these will be young persons not quite capable of taking care of themselves; considering the frequent liability of parties to get parted in the throng of sightseers by momentary lingerings at attractive objects; considering that the pleasures of the day would, in most such cases, be disagreeably interfered with; considering the advantage found to accrue from the "Lost Luggage Department" of railways;—would not a "Lost Friends Department" be a desideratum at the Great Exhibition, *e. g.* a conveniently situated space, slightly elevated and railed off, so as to present the "lost ones" in a well-defined row or two, "until called for?"

W. S. M.

The Iron Trade.—In the Newcastle district a rise of 5*s.* in bar and bolt iron has, it is said, been formally resolved on, at a meeting of the district masters. The great rulers of the English trade, as they hold themselves to be, resolved just the other day that no rise should at present be attempted. What will those who regard all but the highest priced masters as "small and needy" say to this? The Newcastle masters must be very great men indeed, and the ruling powers of past times small by comparison, and needy too!——A very influential meeting of the Scottish iron trade was held at Glasgow recently, in order to consider how the prejudice in England against Scottish iron could be removed. A committee was appointed to report. Thus the recent efforts in the English trade to put down the Scotch appear to be only stirring Sawney's iron "dander" up into a reactionary glow of ire, and we may anticipate a new invasion by the Scots, with iron bars in place of broad swords, and on pigs in place of horses.——The Welsh are also still heating their furnaces for hot work of some sort or other. The Dowlais Iron Works are getting on, according to the *Swansea Herald*, "in a most spirited manner, and are making, on an average, from 1,300 to 1,400 tons of marketable bar-iron per week."

Our National Gallery.—In a city containing nearly 400,000 houses, the Government of this country can find *four rooms* only which they can devote exclusively to the keeping and exhibition of the nation's gallery of pictures. The small city of Dresden has long found room for the fair exhibition of 2,000 pictures, and yet is preparing a new gallery expressly designed for the purpose: and the people of another small German city, Munich, have actually four great galleries within a few hundred yards of their doors,—the Pinacothek, the Glyptothek, the new gallery for modern pictures, and the gallery of the Hofgarten; not to mention the great gallery of Schleisseim, a few miles from the capital, besides the Palace, and twenty other art-exhibitions in churches, and other buildings, always open to the public. —*R. Wornum. in Art-Journal.*

Portland Breakwater. — The daily papers state that its present length is about 1,040 feet—12 feet above high-water-mark. It stands the present gale well, and two points of the compass are already sheltered in Portland-roads with smooth water.